1: Ingrams G-5 (1934-35)1936 MM2 Hadhramaut MM2

at intervals of some 20 feet a series of shafts similar to those described in connection with the Mukalla water-supply. Humat al Harth is temporarily not giving water, as the level has fallen below the channel. At Al Quf itself there are a number of wells, and round each are nursery beds where the tobacco seedlings are grown. The beds are divided into patches three or four feet square and the seed close sown, so close that even where seed does not germinate the workers cut small scratches in the ground and plant fresh seed. When the seedlings are grown to a height of about three or four inches they are taken from Al Quf to Al Harth, about a mile and a-half away, and planted out in rows with intervals of a foot, or three-quarters of a *dhirra*, in beds of a size dependent on the amount of water. A bed is called *mutr*, plural *mutira*, and each is surrounded by a ridge to keep in the irrigation water. In due course the crop is gathered and dried. Drying barns are unknown.

The crop is financed by the merchants who advance the money to the cultivators and are paid back either monthly or after the crop. In the case of the Government lands at Gheil some cultivators pay their rent in advance and some after the crop. The rent of the whole area of the Sultan's land at Gheil is assessed before each season and the figure required communicated to his representative there. This official then rents out the land at a figure per acre based on the total sum required.

The total annual value of the crop is now estimated at five lakhs of which the Sultan receives Rs.120,000 in duty and ground rent. Production costs are estimated at three lakhs, so that the profit to the cultivators is Rs.80,000. In order to foster the local consumption of tobacco, there is a monopoly of imported cigarettes and pipe tobacco.

Of tobacco, Mr. H. M. Heald in his report of the Agricultural Mission to Mukalla says that in the Meifa valley " the cultivation of the tobacco received more attention than any other crop. . . . The seed was sown in a small plot of land which, in the large villages, had been heavily manured with sheep dung mixed with fine earth. When 40 days old the plants were transplanted into the small beds at distances of one foot apart, and again manured with fish ; irrigation varied in the villages but generally every seven days.

" Topping of the terminal buds took place after all the leaves had been formed and the plants were ripe for cutting in four or five months, according to district and season. The plants were dried on the ground first singly and then in small bundles, and afterwards hung up in rows. After drying again in bundles, they were covered with sacks to promote fermentation, and then the plants were taken into the houses for further drying in the dark, and ready for transporting to the coast in a week or so. Practically no grading was done . . . and I am sure " he writes, " better prices would be obtained if more attention were paid to selection."

[241]

†[Tobacco -- Analyst]

1: Ingrams G-5 (1934-35)1936 MM2 Hadhramaut MM2

boiled radishes is given to cattle with " cattle plague ". Donkeys are said to be susceptible to a very fatal disease. 231 232

Both cattle and camels are used in ploughing, the former usually in pairs and the latter singly. For the working of the wells, camels, cattle, donkeys, men and women, all combine, frequently in mixed teams, the animals being generally given a bunch of fodder at the top of the incline each time they reach it. Camels are also employed in turning the machines for extracting the simsim oil. The fact that fodder and water become more scarce north of the main Wadi necessitates a greater use of camels and donkeys are few and far between. Donkeys are uncommon also in the Wadi Maseila, for there is a three-day stretch without water in the middle of the Wadi, and below Buzun the flow is not perennial. Sheep and goats, however, are to be found everywhere, seeking their pasture under the care of women or girls. 231 492

Heald in his report states that no attention is paid to selection during the breeding season—which is usually in the early summer. With the sheep, one lamb is generally the average—although higher up in the Hadhramaut, amongst better pasture, ewes give two lambs. The sheep in the Meifa valley had black fleeces with the curly fat tails, although smaller than the Egyptian sheep. The goats are also smaller than in Egypt and originally came from the Yemen. 231

It was particularly noticeable in the Wadi Maseila that the live-stock were very much smaller than those elsewhere. The cows are little larger than a normal-sized calf, and the sheep and goats are also smaller than those in Du'an or to the north. The cattle are similar in size to those of Soqotra. The breeds of goats and sheep appeared to vary considerably over the whole country, but a black-and-white variety was the most common. His Highness the Qu'aiti Sultan has a few horses, both for riding and carriage work, and I saw one at Meshhed. There are probably not a dozen in the whole country. 613 492

Minor agricultural products.

Dates in the Hadhramaut are merely a hobby, and the entire local crop is consumed fresh during a season of two months, June and July. It may be recorded that a single date-tree in the Du'an valley sells from 400 to 1,000 dollars, many times its economic price. Dates form a staple article of diet and are therefore imported in large quantities. 245 262 435

The principal grain and other food crops are millet—*dirra* (great millet, *Sorghum vulgare*), *dukhn* (bullrush millet, *Pennisetum typhoideum*) and *kenab* or *mesbeli* (Italian millet, *Setaria italica*); lucerne; *jil jil* (sesame, not eaten by donkeys); *dijar* (a kind of bean); wheat (not eaten by donkeys or goats); and a little maize. The stalks are generically known as *qussb*, and the grain as *ta'm*. Hashish or grass is also grown for animals. The principal garden crops are sweet potatoes, onions, garlic, pumpkins, carrots, egg 241

241 plants, chillies, *faquz* (a kind of gourd, *Cucumis prophetarum* L.), and lubia. The fruits include limes, bananas, dates, pawpaws and a few grapes and pomegranates.

Speaking of the Meifa district, Heald states that " near the river the main cultivation was the date crops. The sesame did not receive any special cultivation than that given for the millets; the land was ploughed or broken up by the hoe and, after levelling down with a board, the seed was sown in holes at a distance of 18 inches apart; the crop being sown generally in September. The crop was manured with dung or fish, if available, and good results were obtained from liberal manuring; four or five waterings were generally given. The crop was ready for harvest in 3½ months, when the plants were cut down close to the ground and laid out in rows to dry; the plants were then shaken for the seed to fall out on a mat." Speaking of crops generally, Heald says, " All the crops, being from seed bred in and in, had become very poor as one might expect, and unless they import fresh seed from abroad, nothing can prevent the crops from becoming even poorer than they are at present."

Methods of Agriculture.

134 *Soil.*—Mr. Heald's remarks on the lahd in Asfal al 'Ain apply pretty generally to much of the land in the Hadhramaut. He says, " The soil was of an alluvial nature, and in general very light loam, devoid of humus and requiring heavy manure to produce good yields. The soil in most of the villages in the Meifa valley was alluvial; very thin and with a stony subsoil." In parts of the Wadi Maseila owing to the heavy vegetation there is more humus.

805 241 *Seasons.*—The seasons are arranged by the stars and called Summer (*Seif*), Autumn (*Kharif*), Winter (*Sheita*) and Spring (*Rabia*). From an agricultural point of view it is difficult to distinguish. Crops are often to be seen in all stages, sowing, grown and harvested. According to Heald, the summer crops are Italian and bullrush millet and tobacco, which is sown towards the end of the summer for transplanting in early winter. The winter crops are great millet, maize, lucerne, wheat, barley and all the vegetables.

241 492 412 *Implements.*—The implements are few and primitive. A small plough is used for breaking up the surface of the soil. It consists of a sharpened piece of wood with an upright for the farmer to hold and press the " share " into the soil. It is pulled by oxen or a camel. The hoe used has a pear-shaped head; sometimes the soil is levelled after ploughing by dragging a small board over the surface. Small curved knives are used in the tobacco nurseries for scratching up the soil. Heald saw a " weeder " which was very much like a chisel.

241 *Manures.*—Tobacco beds are occasionally treated with sheep dung, but the principal manure in the lower Hadhramaut is fish manure. As many as three small fish are put on the soil round each plant.

Guano, brought from the small islands of Sikka or Jibus and Jazirat Bureika near Bir 'Ali west of Mukalla, is used when obtainable, but it is expensive. In the heavily-wooded parts of the Wadi Maseila the bush is burnt when cut. This provides a potash dressing the value of which is appreciated by the cultivators.

Terrace cultivation.—" The villages had very little cultivable soil and in many cases the small terraces had been made by bringing soil from a distance and then built up with rubble revetments, the area varying from 5 square yards to ¼ acre. These terraces were always built on the sides of the hills to avoid destruction by floods, and the houses generally on a higher level." Of the Meifa valley, Mr. Heald says that the cultivated terrace areas which were in bulge-like shape along the stream were irrigated by taking the small canals off from the rivers or springs at varying heights and bringing them down at great distances to the terraces. Although all the terraces I saw were generally above flood-level, there are none built high up the Wadi walls.

Irrigation.—Land is irrigated from springs, wells, or rivers. When wells and rivers are used, cattle, or camels, or donkeys, or men and women, or a combined team, pull up one or two leathern buckets attached to a rope running on a wooden pulley. The water then flows down a mortar or mud channel and is finally distributed to the land by small canals. The quantity delivered from a well by this method does not exceed 500 gallons an hour. When the land is irrigated from springs, the water is conducted by channels to the various terraces. In order to supply all the various levels, these small canals take off at great distances and there is consequently considerable loss by percolation and evaporation before the water reaches the land.

Occasionally hollowed-out halves of date palms are used as water channels for crossing hollows, and the cultivators of the Wadi Maseila display considerable ingenuity in bringing the water from the river to the land they are working. The river is usually at some distance from the foot of the steep bank above which the land is cultivated. Channels are dug from the river and a deep hole made at the foot of the bank. A scaffolding is erected over the hole to carry the usual well machinery, and a mud aqueduct supported by tree trunks and branches carries the water on to the higher level ground where it is distributed by canals in the usual way. A sloping walk of timber covered with earth is also provided for the team of animals and humans. Dams to raise the level of the water, and made principally of brushwood, are a common feature of the Wadi Maseila. In other places we saw a number of stone dams.

In most villages irrigated from springs the water is shut off at sunset, and the spring fills a cistern made from stone and mortar designed to hold the spring water running during the night. The springs naturally vary in volume, but Mr. Heald states that they generally range about 5,000 gallons an hour. Of Meifa he states,

312 "The quantities of water differed very much and ranged between 100 gallons and 10,000 gallons per hour in the springs, whereas only about 400 gallons per hour were obtained from the wells, but this quantity naturally depended on the amount of work done by the cattle. The stream in the Meifa valley was rather difficult to estimate on account of its underground sources and losses by evaporation, but, after several calculations, the quantity was decided on 1 m.³ per second and the fall averaged generally 5 feet per mile. This refers only to the stream in open country; as many portions of it poured down through narrow gorges, where it was impossible to calculate."

241 *Dry-farming.*—Heald states that in the villages of Kanina and Jol ar Rakh, or generally the district lying between the Meifa valley and Asfal al 'Ain, he discovered a system of dry-farming worked in connection with the flood irrigation. The flood water, which unfortunately could not be depended upon, poured down the wadis, and by a very good system of canals was conducted on to the land, and the seed sown in the mud—the surplus water being sent down to villages lower in the wadi. In some years the cultivators managed to sow two crops, spring and summer, if the floods permitted, but they only relied on the spring water. In the village of Kanina the cultivators sometimes left the roots of the millet in the soil after harvest, and thereby obtained a second, but very poor, crop.

After the harvest, the land was continually ploughed to retain the moisture ready for the next year, and the cultivators were quite aware of the importance of treating the surface oil in the dry-farming principles; however, where possible, irrigation was done from the springs and wells.

Cultivation.—After ploughing or hoeing the surface, the seed is either broadcasted or sown in holes. The great millet is generally sown thickly in a small plot and transplanted when about 12 inches high, but the other millets are merely broadcasted. As the stalks of great millet are too thin to carry the heads, about a dozen of the plants are tied together by the heads as soon as the seed begins to form. *Dijar* is planted between rows of millet in order to shade it from the sun. It is harvested after two months.

In some parts of the Hadhramaut, as in Africa, men, women and children sit on platforms built above the crop and use a small sling and stones to scare away the birds.

Harvesting.—When ripe, the great millet is cut close to the ground with a small sickle. After a few days' drying, the heads are cut off and beaten by [illegible]s. The heads of other grain are generally cut first and then the stalks pulled up for the cattle, and the stubble burnt on the ground. The grain is put into shallow winnowing fans of a common eastern and African type, and thrown into the air for the wind to separate the chaff from the grain. I saw at least two patterns of quern used for grinding.

[654] 311 241 Mr. H. M. Heald, the agriculturist, visited Asfal Al 'Ain, the Sultan's estate at Fuwa, and the Wadi Meifa. As regards Asfal Al 'Ain, he reported that the whole country along the Wadis through which he travelled consisted of hills and wastes, and from an agricultural point of view was very disappointing. In this rocky region, land is scarce. In a few small hamlets, terraces have been made with soil collected in the wadis, and a few acres of these are cultivated, producing millets, sweet potatoes, dates, and tobacco on a poor scale. These terraces are irrigated from springs and wells, but the latter give very little water. No definite seasons are followed for sowing and harvesting of crops. In one village Mr. Heald saw a crop in three stages of growth, viz., newly-sown, half-grown, and harvested. The soil is generally a light shallow loam of alluvial nature, devoid of humus, and, cultivated as it is by the most primitive methods, is becoming more impoverished year by year. Very little manuring is done owing to the cost of transporting fish and the scarcity of dung.

At Fuwa he saw 250 acres of millet and tobacco cultivated by the Sultan's slaves. Owing to the poor soil and bad cultivation, the produce was but small and none of it marketed. The villages along the coast to the entrance of the valley near Ras Al Kalb are similar to those in Asfal Al 'Ain district, but the cultivation is poorer.

Mr. Heald estimated the total area of the soil in Sidara, cultivated and capable of being brought under cultivation, at about 14,000 acres, of which considerably more than one half consists of swampy or salty land at the mouth of the river at Hali. The total area of all the land fit for cultivation in the country he saw, he estimated at under 20,000 acres.

[312] Owing to insufficiency of water for irrigation purposes, Heald considered it would be difficult to reclaim any large area of land at the mouth of the river at Hali, as most of this land is either swampy or bad salty soil due to the river changing its mouth frequently after heavy rains coming down the valley from the interior. The water is also very salty. Another obstacle to developing this area, and, at present a very big one, is the unhealthy climate and the impure drinking water.

000 Mr. Heald concludes:

> " As regards settlers, it would, on account of the scarcity of land and the unhealthy climate at Meifa, be quite wrong to try and induce people to emigrate from India on a large scale, but a few could be settled at Fuwa and higher up the valley at Jol and Giswal. The present inhabitants, the Sybians, who are acclimatized, could then be sent to the mouth. As, however, this would only affect a very few thousands of acres, perhaps the expense would not be worth the trouble, and the

1:Ingrams G-5 (1934 35)1936 MM2 Hadhramaut MM2

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Clan.	Section.	Places.	Nos.
Nahd Āl Maqārīm	—	Diyār al Maqārīm	30
	Āl Tāhir	Bā Hasān	20
	Āl Muhanna	Al Juwa	20
	Āl Nuheid	Ash Shi'b	30
	do.	Mad-har	40
	Āl Muhammad bin 'Āmr.	'Uneibida and Zukeika	50
	Āl Kuleib	Manwab and Al Ghatās	70
	Āl Bedr Muhammad	Manwab and Al Ghatās	40
	Āl Rabbā'	Sadba	50–70
	do.	Badra, Al 'Ardh, Sirāj, Diyār Āl Nāsir.	160
	Āl Makhāshin	Al 'Ardh, 'Arūdh al Makhāshin.	70
	Āl 'Umar bin Ja'far (Sultans).	Al 'Ajlānia	17–30
	Āl Najjar	—	—
Bā Bekr Āl Hukman Āl Shabbal Āl Hatra	4 sections.		
			2,087–2,160

The Nahd live on the left bank of the Wadi Hadhramaut starting from a point opposite the confluence of the Wadis Du'an and 'Amd due north of Haura. They are Qahtanis and claim descent from Kinda. Ibn Khaldun states that the Beni Nahd are derived from Qudha'ā and that they settled in Yemen in the neighbourhood of the Beni Khath'am. He says they are like wild beasts and that the vulgar call them *As Sarwa*. Most of them are a mixed race, partly descended from the Beni Khath'am and Bajīla. Hamdani, who calls the Nahd a sub-tribe of the Beni 'Ans, mentions the Beni Harām as being the principal sub-division of the Beni Nahd.

The Nahd generally are usually on bad terms with the Sei'ar, though the latter visit their markets in the main wadi. Some of the Nahd are allied to the Qu'aitis and some to the Kathīris. The Qu'aiti has an "A" agreement with the Āl Makhāshin and "B"[1] agreements with the Āl Bā Bakr and the Nahd Rōdhān, though the former are also claimed as allies and followers of the Kathīris.

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The majority of the tribe are agriculturists and grow dates, jowari, and some wheat. The Nahd Dhulfan, whose country is mostly arid and cultivated only after rainfall, live principally by selling firewood and stones in Qu'aiti towns. About three-quarters of the Nahd al Maqārīm are agriculturists and many of them grow wheat on well irrigation; the rest of the clan are Beduins who rear camels and sheep. The Āl Kuleib and Āl Nuheid, who are poor, possess little more than a few date trees; they sell firewood and other things in the Qu'aiti towns. The Āl Makhāshin are settled

[1 See page 92, category 116 — Analyst]

8: Pike N-4 (no date) 1940 MM2 Hadhramaut MM2

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FIG. 17—Ruins of a pre-Islamic city in the Wadi Masila. The site was chosen for defensive purposes and each house was in itself a fortress.

HOT SPRINGS

133
[135] Hot sulphurous springs are widely scattered in the coastal zone, and fairly accurate accounts of many of them are available. They commonly deposit gypsum in quantity. Some of the deposits are so large as to suggest either that activity was more general in the past or that the position of the spring outlets has shifted. The springs may be attributed to the same subterranean conditions that prevail in Yellowstone Park, where descending waters become superheated through close association with uncooled rocks and rise again to the surface.

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[271] Within half a mile of the coast of Hami, east of Mukalla, several hot springs are utilized by the natives for irrigation of date palms and millet and also for drinking. Neither here nor elsewhere does the

[312] FIG. 18—A view in the Wadi Masila where water is present during most of the year. The edge of the Jol appears in the background.

8: Pike N-4 (no date) 1940 MM2 Hadhramaut MM2

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mineral content of the water seem to affect agriculture adversely. A striking example is seen about five miles north of Shihr where a series of springs depositing sulphur and gypsum have built an impressive mound, on which the village of Tabala stands. Their abundant and continued flow enables extensive irrigation by hand-dug canals and aqueducts and affords a means of livelihood for several hundred

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FIG. 10—A caravan settling down for the night on the cold and stony Jol in the lengthening shadows of the setting sun. A caravan stops wherever night may overtake it and with little or no cover the Bedouins find a place to rest among the stones and shiver themselves to sleep. A coating of indigo stain with which the Bedouins not uncommonly paint themselves is said to be some defense against the night air.

people. The temperature of these springs on emergence is not far below boiling point, and they are reported to be the hottest on the coast.

At the small village of Harshiat, 3½ miles north of Mukalla, a few tepid sulphurous springs likewise are valuable for their yield. At the village of Gheil ba Wazir, on the inland road between Mukalla and Shihr, is an extensive gypsum flat and also a group of gypsum-depositing springs. Here a tobacco-raising community has sprung up. A part of the arable land is devoted to the growing of dates and millet and the remainder to tobacco, for which, owing to a quality unsurpassed in Southern Arabia, demand exceeds supply.

The small community of Husn Baquidran depends on a limited but constant supply of nongypsiferous sulphur water in the mountains of the Wadi Hajr, 30 miles from the coast. Irrigation is practiced on a small scale. The sites of Sidara and Mahamda, on the Wadi Hajr above Husn Baquidran, were determined by the presence of several groups of sulphur springs that are used for irrigation and consumption.

VEGETATION

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Today only the seaward fringe of the Dhufar Coast region, which during the pre-Islamic empires of the Minaeans, Sabaeans, and

9: Ingrams G-4 (1934-1944) 1945 MM2 Hadhramaut MM2

Audhalis, 'Aulaqis, and Beihanis are too far away, and it is doubtful if any federation with them could be very real. The Yafa'is, though they are excellent outside their own mountains, are at present a very difficult problem from the point of view of good order and government in them. I had almost forgotten the 'Aqrabis, but as that kingdom consists in effect of only one village on the borders of Aden and Lahej they hardly constitute a problem. But it is possible that some day steps towards the federation of the protectorate by areas may come to pass.

If, however, the political outlook is not very promising, experience of recent years has shown that in potential agricultural resources the Western Protectorate is far better off than the Eastern. It is true that its total area is not much more than half that of the Eastern and that by far the greater proportion of it is barren mountains or arid desert, but none the less the cultivable acreage is greater than that of the Eastern and the people are on the whole better agriculturists. There are fewer beduin, and the tribesmen, unlike those of the Eastern Protectorate, are many of them tillers of the land on which they live, rather than employers or financiers of a peasant class with the idea that manual work is unbecoming to dignity. On the coastal area there are large and useful oases at Lahej, Abyan—by far the biggest—and Ahwar. These oases are sure of regular spates from the Yemen highlands behind, and can grow useful crops of grain, principally millet, and vegetables and fruits of the coarser tropical kinds. There are good patches of soil in the Dhala and Yafa'i mountains, and the latter grow the best coffee in Arabia, but at Mukeiras in Audhali country there is a really important fertile area at over 7,000 feet where temperate crops are grown and which is now producing in fair abundance European vegetables and fruits of excellent quality which include potatoes, tomatoes, lettuces and so on, apples, peaches, plums, and apricots. The main difficulty in disposing of these good things, for which a ready market exists in Aden for local consumption and for shipping, is communication and transport. The Audhali plateau is over a hundred miles from Aden and is cut off from the maritime plain and the foothills by a 4,000-foot, almost perpendicular bluff, the picturesque Kaur al Audilla. So road-making is difficult and expensive, and the bad tracks play havoc with the lorries used for transporting the produce to Aden from the foot of the bluff, down which it is transported on animals. If ever the Yemen is developed agriculturally it will have great advantages over Audhali country, for roads can be better made. The main agricultural produce that now comes by caravan and lorry from the Yemen is the highly perishable and iniquitous qat, and the qat traffic is probably centuries old. Better communication and better agriculture in the Yemen would therefore make it difficult for the Audhali country to be economically worth while. Beyond the Audhalis and descending towards the heat of the desert is Beihan country, which drains to the Rub'al Khali. Having high mountains behind it, it is reasonably watered, and millet cultivation is being extended there.

The present tendency in the improvement of conditions in the Western Aden Protectorate is to select an area where conditions are favourable and send a political officer to assist the chief to establish control over his people,

9: Ingrams G-4 (1934-1944) 1945 MM2 Hadhramaut MM2

behind it, and not the high mountains of the Yemen. Its height above the sea-level nowhere exceeds 6,000 feet and is generally not more than 3,500. It has therefore no regular rainfall.

Then, as regards treaties, while the W.A.P. has a total of about thirty-five chiefs in direct relation with His Majesty's Government, the E.A.P. has only seven, of which one, the Kathiri, is comparatively recent. The reason is that in the E.A.P. all that was required was to keep foreign powers off the coast. All the six original treaties with E.A.P. rulers were with coastal chiefs. Starting from the west, 'Irqa and Haura are only small villages. The two Wahidi Sultans come next, then the Qu'aiti, the largest of them all, whose state to-day covers some 50,000 square miles, and then the Mahra, which includes Socotra Island. While the W.A.P. is historically part of the Yemen, and has now a new and natural capital in Aden which supplies it with all its requirements, the E.A.P. is historically and geographically detached and has a local commercial capital in Mukalla, but looks to India, Singapore, and Java for its cultural and social contacts.

The Hadhramaut is historically and geographically a country in itself, and consists of the Wahidi Sultanates, with the two little Sheikhdoms of 'Irqa and Haura, which are really ports in the country of the Dhiyeibi tribe, who are a Wahidi tribe, and the Qu'aiti and Kathiri States. I propose not to say anything more of the Mahra country because as yet little is known about it, though in the last year or two more has been learnt of Socotra.

You will have gathered, I think, that, owing to its desert nature and lack of rainfall, the prospects of the development of agriculture in the Hadhramaut are not very promising, and as the various explorations that have taken place to date have not discovered any mineral resources, it does not look as though the economic future is very bright. The best agricultural areas are Gheil Ba Wazir, on the coast, where Hamumi tobacco is very successfully grown, and this brings in a revenue of about Rs. 200,000 a year to the state, and Meifa, in which conditions have been considerably improved in the last few years and where some further development is possible. It was hoped that the alluvial silt of the Wadi Hadhramaut would prove a fertile area for wide development if water could be found, but experiment has shown that it is largely brackish and, bearing in mind the desert surroundings, it is probable that any further supplies of water which boring might discover would not be sufficient to wash out the salt. It is unfortunate, too, that the bulk of the population, the seiyids and tribesmen, do not take to working on the land themselves, as do the tribesmen of the W.A.P., but rely on dhafa, a class of poor townsmen who are almost in the position of serfs. These dhafa lived by building the palaces of the rich and working their wells, but the fall of Singapore and Java cut off the supplies of money from the Far East so that the rich could no longer maintain them. The beduin had lived by carrying supplies from the coast to the interior, but with the falling off of imports they too suffered. On top of this catastrophe there was a seven-year drought from 1937 to 1944, which meant the loss of crops, flocks, and 50 per cent. of the working camels, so that between the difficulties of

14: van der Meulen T-4 (1931) 1932 MM2 Hadhramaut MM2

On the 19th of May we reached Horēda, the tribal village of the family al-'Attās, where we had a fine reception. Horēda can thank the wealth accumulated in Java and at Singapore for its beautiful houses and mosques. There is a large number of Dutch subjects there, and so many of them speak Malay that one even frequently hears it spoken on the streets.

On the 20th and 21st of May we remained at Horēda. The mosques and schools were carefully examined, and some short excursions were made in that neighborhood.

Horēda lies in the Wādī 'Amd, which branches off from the main *Wādī* of Hadramaut, to which we now returned, leaving Horēda on the 22nd of May. Bin Marta' from Soerabaya, a large dealer in building materials, took us in his auto, which was the first that ever came to Horēda, to the place where he lives, Hēnan. It was a difficult task among the endless sand-hills to find a track on which it was possible for the auto to travel, and when a sandstorm came up we had to flee to the Diyār-āl-Buqri, certain high castles in the midst of the broad sandy *wādī,* which were the center of a warfare which had been going on there for years. The fighting captains and their soldiers received us very well; they appear to have close family relationships with Java. Elsewhere, in a description of the political situation, I will deal minutely with the Diyār-āl-Buqri and their inhabitants. Hēnan is a little place which is lost in the sand. By installing a motor pump, our friend Bin Marta' is trying to arouse his village to new life.

On the 23rd of May, Bin Marta' took us in his auto to al-Qatn, the residence of the sultan of Shibām. We were here once more in the āl-Qa'ētī jurisdiction. At al-Qatn the Wādī Hadramaut changes completely, and beautiful date-palm plantations begin here. In the shadow of these palms lie the luxurious green *dhura* fields (maize). The sultan did not appear to be at al-Qatn, and we were received by a member of the family. Through a severe sandstorm we drove on to Shibām, the

133 the amount of evaporation. Accordingly we find in the north–south wadis a
311 continuous belt of cultivations with hamlets of a few houses every mile and towns about 15 miles or an easy day's walk apart. As opposed to this the cultivations in the Wadi Hadhramaut, which runs west–east, are to be found mainly in belts along the northern and southern sides, the south belt being wider than the north, due to the increasing evaporation and lower water table towards the centre of the wadi.

311 Except for the hamlets which occur among the fields, the buildings make
361 use of unproductive land, and perch up against the cliff side on the talus slope. This position also carries the advantages of shade together with good siting for defence. Where land is at a premium, villages may be so sited as to become inaccessible even to the draught and load-carrying beasts used in agriculture, and the stables and grainstores are found at the edges of the fields and at the foot of the narrow winding path leading up to the village (Plate 3).

[104] Water for the permanent cultivations of *dhurra* (*Sorghum* sp.), *dukhn*
312 (*Pennisetum typhoideum* et spp.), lucerne and date palm has until the last few
406 years been drawn by man or animal power, raising a leather bag of water by
241 walking down a ramp away from the well shaft. Nowadays greater use is being made of diesel- and petrol-driven pumps, increasing both the yield and the area it is economical to cultivate. The effect of these pumps, which are available on deferred terms, in lowering the water table will be watched with care. New crops such as potatoes, the brassicas, and sugar cane are also being introduced under the agriculture scheme in an attempt to make the Hadhramaut, if not entirely self-supporting, at least less dependent on its "extra-territorial population."

241 This limitation does not apply to the flood crops which are snatched
312 wherever possible. Throughout the lower wadi systems there exists a com-
361 plicated network of deflector dams which have the object of spreading the floodwaters over as large an area as possible, and leading a certain part of them into irrigation channels. Many retaining dams have been attempted, but usually unsuccessfully, as the major structure has been an earthwork with only the spillway of durable construction. In the shallow beds of the wadis running north from the secondary watershed there are many small cultivated patches and groups of two or three fortified houses are often situated where camel tracks converge on water cisterns cut into the rock.

The transition belt.

133 The transition zone between the mountain systems and the sand desert takes a number of forms. North of the Ramlat[1] al Mundafan the Kaukab sandstone plateau overlies the crystalline rocks to the west, and to the east has eroded to become an area of minor plateaus and blocks. Through the wide flat valleys between these minor plateaus runs the main Najran–Dawasir track, roughly north–south in longitude 44° 45′ E. at a general height of a little under 3000 feet. To the east of this track lies the southern section of the Nafud Dahi, running parallel with the road, and rising to a height of 100 feet

104 [1] Ramla(t): a general name for any sand feature. Thus the Ramlat al Mundafan means literally "the buried sands."

18:Ingrams G-3 (1934-36)1938 MM2 Hadhramaut MM2

Haswein, and Heila, entirely by the people themselves, and most of the seventeen landing-grounds in the country are now in frequent use by the Royal Air Force. It is interesting to note that many of these landing-grounds were built on the initiative of the local people, and all the new ones were voluntarily constructed by them at no expense to Government. The Sei'ar, the Badawin 'Awamir in the north and one or two others have asked for landing-grounds to be made so that they may be visited.

Hitherto communication with the Hadhramaut has been by irregular calls of ships at Mukalla and Shihr, but now there is a weekly commercial air service maintained by Arabian Airways from Aden to Mukalla and Seiyun. There was previously no postal service but now there is a post office at Mukalla and five postal agencies at the principal centres of Shihr, Tarim, Seiyun, Shibam and Du'an. There was no wireless communication, but now there is a commercial service with Mukalla and Government stations at Seiyun and Al 'Abr, and another in contemplation.

Remarkable as these improvements in communication are they do not yet fulfil all the needs of the country, for it is over 60,000 square miles in extent with a population of only about 300,000, of whom perhaps 50,000 dwell on the coastal area and 100,000 in the comparatively fertile wadi lands of the interior, while the rest are Badawin or scattered in more remote settlements where the soil allows the production of a modest living. This wide area, rather larger than England and Wales, has now been all seen, at any rate from the air, though of course not all has been visited on the ground and there are still wide and very desolate areas which have yet to be trodden.

The areas that offer most scope for development and on the development of which the prosperity of the whole country must depend are, of course, the coast and the Wadi Hadhramaut system itself. As in all tropical countries agriculture must be the basis of the modest natural wealth of the country, and the area that offers most scope is the Wadi Hadhramaut and its dependent wadis, principally that part of the wadi between Henin and Qa'udha on the west and As Som on the east, with the Wadis Du'an and Leisar, 'Amd, Bin 'Ali, Al 'Ain, Tarba, and 'Adim, running into it from the south. Generally speaking little cultivation is attempted in the wadis from the north.

The outlook of the coast, dominated by Mukalla and Shihr, is chiefly commercial and maritime. Those who do not depend on trade go down to the sea either in the dhows or as fishermen, though there is a certain amount of agriculture and the most important areas are Meifa and Ghail Ba Wazir. From the development point of view the Hadhramaut is fortunate in possessing a balanced population and one that has shown itself enterprising in the making of money abroad. It is the general belief of responsible local opinion that many of the 100,000 Hadhramis who live abroad will return, now that there is security and the prospect of finding a living in a country which, more than many peoples with the emigrating habit, they always regard as home. In a balanced population there are classes which fit into every phase of the cultural and economic structure of society, and the obvious basis of development will do nothing to upset the existing structure but simply give it extended scope. In areas inhabited only by tribesmen development must be difficult and slow, for there are many occupations

18:Ingrams G-3 (1934-36)1938 MM2 Hadhramaut MM2

hospitality in the new house during the past year, and last hot weather nothing was more delightful than to sit in the swimming pool in the evening and listen to the strains of the B.B.C. Empire Orchestra. Since then the Arabic broadcasts have started and they are extremely popular throughout the Hadhramaut, which now sets its watches by Big Ben. Bathing over, dinner would be laid on carpets by the side of the bathing pool. One rarely sits down less than twenty at meals in Seiyid Bubekr's house and very often it is forty. The average daily consumption runs into about 30 to 40 lb. of rice, three or four dozen eggs, half a dozen chickens, and one or two sheep, and several pounds of vegetables. We went up for the wedding of his daughter, and then over five thousand people were fed for three days.

Seiyun has been our principal headquarters in the wadi, and from it I have continually visited all the neighbouring places, staying at Shibam, Al Qatn, Henin, Qa'udha, and Hureidha. You never get to Hureidha without stopping for a meal at Diyar al Buqri, where the people are so hospitable that they have been known to fire on those who have attempted to pass in cars without stopping to have a meal. The Buqri are Nahd, and although they are settled they are still rather Badu. On my first visit they offered us a large house if we would but stay and rule the country, and it was then I learned that they had imported a first-class cook from Java in the hope of being able to entertain Europeans. Great as is the hospitality and kindness of all the Nahd, the meals at Diyar al Buqri are as fine and as varied as anything you could get anywhere. Their ideas even of afternoon tea are on the most lavish scale. I have had it with them three times and on each occasion they have produced cakes, honey, and halwa, several varieties of tinned fruit, British biscuits, and super-cream toffees.

Beyond Diyar al Buqri, as you enter the Wadi 'Amd, stands a little fort with a sentry for ever gazing out. It was some time before I discovered that the sentry was a dummy, a lump of clay artistically draped with a black cloth, but in recent months I notice he has fallen into disrepair. The Nahd extend down into the Wadi 'Amd almost as far as Hureidha, of which the population consists entirely of Seiyids of the Al 'Attas family and their dependants. Here, too, I have several times stayed, and there is now a landing-ground. There is no need for me to say much about Hureidha as it is here that Miss Stark, Miss Caton-Thompson and Miss Gardner have been wintering. One interesting fact about Hureidha may however be too trivial for their notice, and that is that one of the mosques has two large town clocks, one with a face 6 feet in diameter and the other 3 feet. Only the latter works, and they are of course at the top of the high minaret. But they are inside the minaret, and you have to walk up sixty or seventy steps to see the time.

Up the wadi from Hureidha is the Ja'da tribe. I have not travelled farther up the wadi than Hureidha on foot, but before I went there for peace negotiations my wife did the journey on camel. The wadi is thickly populated and has numerous small villages which at that time were nearly all at war with each other. My wife took down particulars of thirty-two major feuds going on between sections and even between houses a few yards apart. There were trench systems, similar to those at Qa'udha, leading from the houses to the fields, but owing to the disturbed conditions cultivation had suffered badly

AND THERE WAS A GENERAL DESIRE FOR PEACE IN ORDER TO GET ON WITH THE WORK IN THE FIELDS.

22: Reilly G-3 (1933-41) 1945 MM2 Hadhramaut MM2
M/Middle East Islands MM1
Socotra

Where the slopes permit, the sides of the hill are terraced by the industrious inhabitants to grow crops and, in the higher altitudes, the excellent Mocha coffee for which Southern Arabia is famous. Villages appear in unexpected places, built of mud brick in the low country and of stone on the mountain-sides and hill-tops. Among these habitations are seen always the square towers, or *tars*, and the little mosques or whitewashed shrines that are characteristic of the Arab villages.

The aspect of the country varies in its different parts. Immediately to the north of Aden is the large and fertile oasis in which stands the capital of the Sultan of Lahej. It is irrigated from the bifurcation of the Wadi Tiban that brings water from the mountains and then disappears in the sands near Aden. To the east and west of Lahej are desert strips, but beyond are the Subeihi hills and valleys to the north-west, the rugged Haushabi country, and the pleasant district of Dhala in the Amiri highlands to the north, and the lofty mountains of Yafa to the north-east. Thence to the eastward a steep escarpment spans the country like a rampart, and is crowned by the fertile Audhali plateau 7,000 feet above sea-level. Farther east, beyond another stretch of rough, mountainous country, is the fantastic and barren *jol*, reminiscent of pictures of the surface of the moon. To the north of this strange and desolate area, and in striking contrast to it, is the wide valley of the Hadhramaut, with its chain of towns and villages, its skyscrapers, country houses, palace and gardens. Beyond again, away to the north, lies the edge of the Rub' al Khali, the Empty Quarter, with its sea of tumbled terra-cotta coloured sand dunes stretching into the distant interior.

On the sea coast of the Protectorate there are at intervals fishing villages and little ports, and about 300 miles to the east of Aden stands the picturesque town and port of Mukalla, the capital of the Quaiti Sultan. Protected by a steep background of rock, its white houses cling to the shore, and its appearance from the sea is singularly attractive. The town of Shehr lies on the coast beyond it, and eastward again there are more coastal villages, of which Qishn, the capital of the mainland territory of the Sultan of Socotra, is the most important.

The large island of Socotra, situated about 500 miles to the east of Aden, forms part of the Protectorate. It, too, is a mountainous country, but, owing to its greater rainfall, it is much less bleak than the neighbouring mainland. It has a good deal of varied vegetation, and is noted for its so-called dragon's-blood tree, the sap of which is exported to India and elsewhere to make a rich purple dye. Socotra has also a

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

grown banks; we saw it no more after we had passed the grotto in the rock-wall to the left, where it made its appearance. The vegetation, however, continued rich and varied, and we could see from the little springs at the foot of the rocky wall that there was still a great quantity of water. Great blocks of rock had fallen here into the wādī from the steep sloping walls. In some places these walls were completely hollowed out by wind and water, and only a crust remained.

From Lubēb Von Wissmann had begun to survey the route. Up to that point we were able to use the excellent map made by Little on his geological survey of the mountainous country of Makalla in 1919—'20.[1]

The valley now rises more rapidly, and it requires much patience and skill to lead the loaded camels and donkeys over the great blocks of rock. The mountain camel knows this sort of ground, passes neatly through the blocks, and as he steps aside and turns thinks of the load projecting on either side of his body. On a warning call from the leaders: "Take care left!" or "Look out right!" the animal goes cautiously a little further away from the place where its load is threatened.

At the end of the wādī, about two miles beyond Ḥōṭat el-Laṣb, there is a little plateau to which a short ascent leads us. There is a plantation of date-palms and *dhura*, which is still within the boundary of Ḥōṭat el-Laṣb. At the end of this small plateau lies the village of Lubēb. We leave it on our left and descend towards Wadī Ḥimem, which, again, is shut in by high walls of limestone. The farther we advance the narrower becomes this wādī. The camel path along the steep cliffs to the right is blocked here and there with boulders. Some miles after Lubēb, the now narrow rock ravine makes a bend. Here is a splendid spring with a drinking-trough of masonry for the animals. The place is named el-Ḥallāf. On account of the road survey we are compelled to camp as soon as darkness falls. Indeed it would be difficult to march further in this valley of boulders.

[1] O. H. Little, *The Geography and Geology of Makalla*, Cairo, 1925.

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and is only important as part of the food supply of the common people. The slave and the Bedouin consider the Dōʿan date as the really good one; the imported one, from Baṣra, they regard as inferior. The sayyids and notabilities who have made money abroad do not set much value on the date as an article of daily food. They keep on their date-groves in order to have a summer pavilion and a swimming-bath and to enjoy the shadow, the twittering of birds, and the old, familiar squeaking and creaking of the wooden wheels over which run the ropes drawing the water for irrigation from the wells to the surface. The family domestic staff and slaves with their wives and children find work in the date-groves, where they earn the food from which they chiefly subsist. The date plantations of the rich in this country are under present conditions no longer a source of income.

The fields which are dependent on the *sēl* go on beyond the tract where the date-palms come to an end. They lie, well tilled, waiting for the rains higher up. Sometimes there is only one *sēl* in the year, but if it is a good one, its supply of water suffices for a successful harvest of dates. In the open spaces between the dates *dhura* is grown in summer, and *burr*[1] in winter. Most of the *sēls* occur in autumn.

There are fortunately plenty of *siqāyas* on the way to Ṣīf; it is true, the water is not always clear or odourless, but we are so tormented by thirst that we pay no attention to that.

Already long before Ṣīf cultivation ceases in the broad bed of the wādī, and our narrow path winds over bare stones.

Towards sunset we see Ṣīf lying on a broad slope of rock débris just where the wādī is very wide and the rocky bank is broken and retreats. The little, walled-in village looks rather poverty-stricken; the houses are not high, and only a few of their inhabitants appear to be well enough off to allow of their dwelling-floors being whitewashed, and of having a gay border to the balustrades of the roof-terraces.

[1] *Burr* (بُرّ), *triticum vulgare* Vill., cf. Schweinfurth, *op. cit.*, p. 172, 175.

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After descending the slope on which the town lies, we enter a wonderfully ploughed area of loam soil. The brown hills of loam rise up, completely bare, out of the deep green palm-groves and the fields of *dhura*. An extensive system of irrigation canals with their side-channels provides for the distribution of the *sēl* water over all the cultivated land lying between the hill-ridges. The further we go beyond Hadjarēn the larger grows the number of defence and watch towers on the hill-tops beside the groves. The number of date-palms decreases, the fields are, at first, green, but, at last, only the loam dykes indicate that, given sufficient water and adequate safety, one can sow here as elsewhere. A stretch of half an hour's going forms the neutral zone between the Qeᶜēṭī and the Kathīrī territories. From now on, in view of the risk of being held up, the caravan must keep together. The bed of the wādī remains wide, yet becomes wild and devoid of vegetation. Here and there the loess is covered by sand and stones. There must have been a large town here in ancient times, for the way to el-Meshhed runs between ruin mounds. The sun is setting and we are to reach el-Meshhed before darkness falls. The donkeys are sent back to fetch the tired party who have climbed Djebel Hadjarēn.

241 ● 361

5. EL-MESHHED, A CENTRE OF RUINS.

El-Meshhed is an extinct small town situated in the midst of the plantless, desert wādī. The meaning of the name el-Meshhed is "the place where a martyr died". It is important for a yearly fair and as a place of pilgrimage. During the days in the month of Muḥarram, fixed for that purpose, the place must be full of buyers and sellers lodging in the houses and temporary shacks; now most of the houses are empty.

361 103 438

The Governor of el-Meshhed is not in town, he prefers residence in the larger, more prosperous Ḥurēḍa, where he has also a house, a family, and groves of date-palms. His sons are

662

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721 and the police better in the Dutch colonial territories. This
648 same question was repeated again in the evening, in the reception-room of our host at Hēnin. However pleasing I may have found these signs of appreciation for western colonial government on the part of an eastern Muḥammadan people, I continued to answer with evasions and urged them to take the matter into their own hands and to achieve unity, forced on by necessity.

2. THE OLD DYING TOWN OF HĒNIN.

It cost us much pains to decline the pressing invitations to stay longer and to continue the journey to Hēnin in the afternoon.

The hot wind is still filling the wādī with a thick, high-driven mist of sand and dust. The Buqrīs, with their numerous soldiers crowding round them, accompany us till we are outside the gate on the side away from the enemy. Obviously they are all sorry we are leaving so soon and that this variation in their monotonous life comes to so early an end. Before our departure we promise, gladly and faithfully, should we return by this route, to spend the night in their high, beautiful castle. Before long Diyār Āl Buqrī has disappeared in the haze of sand and we travel in absolute solitude amongst the hillocks of loam. Bin ʿAwaḍ Martaᵉ, steering a very twisting course, seeks those places where his car can pass between the line of hills. The lower parts are filled with fine sand that lies piled up by the wind so that we have to go by way of the slopes at the foot of the loam-hills. We pass a few tumble-down villages; of vegetation there is hardly a trace.

361 The number of settlements increases as we approach the
●241 neighbourhood of Hēnin. They are situated partly at the foot
134 of the mountain-wall which forms the northern bank of Wādī el-Kasr, and partly close by, in the bed of the wādī. Little dykes, which make rectangular divisions in the loam, are a sure proof that agriculture was once carried on here. It does not

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look as though this is still possible in any way; the drifting sand has killed the date-palms and reduced to a minimum the cultivation of *dhura* and the like. The hamlets are partially deserted and the mud houses fallen in.

The very ancient town of Hēnin[1] has shared this fate. The place lies like a long line at the foot of the rock-wall. Castles and defence turrets higher up have fallen into ruin as have most of the houses of this once important town on the road to the Yemen.

Bin ʿAwaḍ Martaʿ has returned to his fatherland from Surabaya with the resolve to try to check its decay. The family house has been restored by him and a new storey built on to it. He has brought from Java a motor pump which has been set up on the 70 feet deep well. The pump supplies 30 gallons of water for irrigation per minute so that, if it works for eight hours a day, it just suffices to wrench a few acres of *dhura* from the sandy desert and to keep alive the 200 young date-palms which are planted between.

Bin Martaʿ himself now also realizes that this is but a service of love at a death-bed and that his motor pump cannot save Hēnin from decay and from the engulfing sea of sand. Hēnin is like a little town destroyed by storm on the rocky coast of an interminable sea of sand which has first swallowed up its palm-groves and is now submerging the place itself. We have seen nothing of the Bā ʿAṭwah, the poet beggars of Hēnin.[2] They have been driven by poverty to the prosperous parts of the valley of Ḥaḍramaut and to Java.

Hēnin is nominally under Qeʿēṭī rule; the Sultan of Shibām and el-Qaṭn protects the place and the insignificant little villages surrounding it. That evening, in the great *madjlis* of Bin Martaʿ's house, we met the poor, simple shēkhs of the

[1] Cf. el-Hamdānī, *op. cit.*, p. 85, l. 19*sqq.*, 86, l. 20 *sq.*, 88, l. 10 *sqq.*; De Goeje, *Hadhramaut*, in *Revue Coloniale Internationale*, ii. (1886), p. 110.

[2] C. Snouck Hurgronje, *Zur Dichtkunst der Bā ʿAṭwah in Ḥadhramōt*, in *Verspreide Geschriften*, v. (Bonn, 1925), p. 393 *sqq.*

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361 district called el-Qaṭn, now stands out clearly against the foot of the rock-wall. The ground grows flat; the loam emerges freed from the layer of sand; rectangular patches point to occasional cultivation of the land during a favourable rainy season. There is a low-growing plant in the fields; it is a weed that is used as fodder for cattle.

361 Furṭ el-Qaṭn is only a hamlet, but a continuous series of
●241 palm-groves and fields of *dhura*, lucerne and sesame stretches from here until beyond Ḥōṭat el-Qaṭn, where the Sultan is resident. All actual cultivation is due to irrigation by means of wells. A broad strip of ground which is cultivated when there is sufficient rainfall stretches outside the date plantations. The level of the subsoil water is nearer to the surface here, as the wādī descends more rapidly than does the subterranean river. Beyond Terīm it comes above the surface for considerable stretches.

312 The wells and the tracks along which beasts and men go to
231 draw up water are mostly situated in the shade of the date-
241 palms. Where shadow is lacking, long strips of jute or other
564 material sewn together are stretched over the track to make
571 shade for men and animals. Donkeys and cattle are used for haulage, but mostly with the help of man's labour. The poor, hard-working and little honoured caste of the *ḍaᶜfā* (the peasants) [1] have as their chief occupation this irrigation work [2], which really goes on almost all the year round. The *ḍaᶜīf* walks backwards beside his cow or donkey, pushing at the hauling rope with the back of his thighs, in which way his weight has most effect. By the time they reach the end of the hauling track, the bag full of water, which is generally leaking considerably, has appeared at the rim of the well. The *sānī* draws the bag of water (*gharb*) to the rim by a thin rope,

104 [1] *Ḍaᶜfā* is the plural of *ḍaᶜīf* (ضعيف), which name is given in Ḥaḍramaut to the agricultural labourer class, cf. C. Snouck Hurgronje, *Verspreide Geschriften*, iii, p. 220 and v. p. 406.

104 [2] Here called *senāwa* (سناوة); the man who works it is the *sānī*. Cf. C. Snouck Hurgronje, *loc. cit.*

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where it empties itself into a little mud basin, out of which the irrigation conduits lead to the cultivated ground. Work at the well occupies the whole family: father and son guide the animals and walk with them in hauling ropes and mother and daughters relieve them at this work. Two old dames sit in the shade making ready food for the beasts, which consists of dry straw bound round with fresh green into bundles, that are pushed into the animals' mouths whenever they arrive at the top or bottom. I saw women continuing their mat-plaiting whilst, at the same time, walking backwards in the traces down the slope of the track. The work is very tiring: pulling whilst going down hill and then climbing up again. The path, on which their walk begins at sunrise, is as long as the well is deep.

2. TO THE SULTAN'S PALACE IN EL-QAṬN.

One sees the tall buildings of Ḥōṭat el-Qaṭn even from afar rising above its walls and the tops of the date-palms. The place is not large and is situated, like the townlets in Wādī Dō'an, stretched out and closed in between date-groves and the rock-barrier. It is surrounded by a mud wall kept in good repair. At the gate of the town we see our caravan; it is on its way to Shibām with the baggage and is resting here during the heat of the day. Although we are informed that the Sultan is staying in Shibām, we wish to pay a visit of courtesy to his deputy at the palace; possibly he may allow us to make a survey and to photograph from the roof of this very high building. The palace has just been partially renovated and, consequently, has not yet the gay outside decoration of whitewash. A broad staircase leads to a large, finely carved door. There we give our letter of introduction to the guard and after some time we are invited to follow him upstairs. By way of broad passages and endless stairs, both plastered with dried mud, we arrive at the reception-room, which has just been finished. Much of the beautiful old Arabian style is spoiled here by

CHAPTER IX.

SĒWŪN, THE HEART OF HADRAMAUT PROPER.

1. PENETRATING INTO THE ĀL KATHĪR TERRITORY.

The border of the Qe'ēṭī territory is a quarter of an hour's walk to the east of Shibām. There, high up at the edge of the mountain, is a fort and an observation post; there are also mud block-houses in the plain. Somewhat further along the mountain's ridge the white military posts of the Āl Kathīr are visible.

On the afternoon of May 24th, immediately after leaving Shibām, we cross the sandy wādī diagonally towards the northern side, where there is least vegetation, but also least warfare. The whole southern side has the name of being unsafe. But even here on the north, soldiers dog our footsteps whenever we stop to take photographs. The villages are built up against the mountain foot, and on higher points are the ruins of fortifications. Following the margin we again enter date plantations, which are, however, very thin and finally perish in the engulfing sand. Then we go on through sand-dunes overgrown with a kind of beach-grass. Close by Sēwūn we again have to cross the bed of the wādī, as this place is situated on the southern side. There is water, here and there, in the *sēl*-bed; it is, however, very bitter. The soil close to those stagnant pools is covered with a crust of white salt.

Sēwūn lies within a wide belt of magnificent palm-groves and fields of *dhura*. The water-level is only eighteen to twenty-one feet below the surface; the water has a saltish taste, but appears to be exceptionally suitable for the irrigation of the gardens. We had not so far seen such vigorous date-palms and such luxuriant, tall-growing *dhura* as in this part of the country. The hot wind has already ripened the bunches of dates, which are comfortably hidden away by this time in their

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241 protecting baskets. Sēwūn is said to be the finest and largest town in Ḥaḍramaut. It well deserves its appellation "eṭ-Ṭawīla, 103 the Long", but it could also be called "the Clean" or "the 342 Beautiful". The houses are lower and smaller and stand wider 361 apart than those of Shibām. Also dirty water and other iniquities do not simply rain down into the streets. They flow through open or covered gutters along the outer walls of the houses into closed-in cesspools of masonry. It is true, the streets are also narrow; our cars, from time to time, could only just pass through them, but there is plenty of light and no bad smells. At the gate of the massive palace of the Sultan we learn that the authorities are awaiting us in the summer residence ʿIzz ed-Dīn. Sēwūn and this garden city have quite grown into one; many of the wealthy families live in their garden palaces the whole year round. Passing through a gate in a mud wall we drive up a great courtyard which is flanked by a long white building, only one storey high. The tops of the palm-trees overhang the edge of the spacious roof-terrace, which for the greater part is carpeted and where the Sultans of Sēwūn and Terīm await us, surrounded by their counsellors.

2. THE SULTANS OF SĒWŪN AND TERĪM AND THEIR SURROUNDINGS.

643 ʿAlī bin Manṣūr bin Ghālib bin Muḥsin Āl Kathīr, Sultan of Sēwūn, is a short, thick-set man, with one eye, with which, however, he looks at his guests with double friendliness. His brother and his two little sons are also among the great gathering there assembled; likewise his nephew, the Sultan of Terīm, a tall, slim, very dark-complexioned young man, whose name is Muḥammad bin Muḥsin Āl Kathīr. The Sultan of Terīm is generally in Sēwūn with his uncle; his small, graceful, white palace is almost opposite that of the latter; it is much more beautiful than the one in his official place of residence.

000 In the middle of the roof-terrace is a room, open on all

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Sewün's garden city.

p120 (c)

See page 333

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

helped by the motor-car in his great work of pacifying and opening up Ḥaḍramaut.

We depart in two fine cars belonging to the Sultan of Sêwûn for Terîm, the city to which Leo Hirsch has preceded us and from which nearly forty years ago the sayyids with their fanaticism and hatred of Christianity forced him to flee within a few hours of his arrival. An Englishman, Mr. Boscawen, reached there also a full year in advance of us, but he did not publish a description of his journey and, according to report, only came for sport. Aeroplanes of the R. A. F. at Aden, with Colonels Cochrane and Lake and Flight-Lieutenant Rickards on board, also once flew high above the town, but they were only making an aerial reconnaissance, although the scouts themselves felt a growing desire within them to set foot for once in this wonderful town. The Ḥaḍramîs say of it: "Terîm — and then thou desirest nothing else."

The cars take us through winding mud lanes between palm-groves to the hilly stretch of sand and loam outside the town. The palm-trees are planted well apart from each other in the sand; the fields of *dhura* come to an end but the little dykes of the area that can only be cultivated when the rains are sufficient are to be seen for long afterwards. Quite soon we pass the ruins of a town, Maryama, probably of great antiquity. The castle and the town were laid waste in a local war, and, of the cultivation of the land, only the little dykes, which divided the fields into squares, still remain. Close to Maryama there was an old road which crossed southwards over the mountain-wall. My companion climbed this *ʿaqaba* called Duqm el-Aswad and found on the rock-wall close to the *djôl* scrollings and grafitti probably made, many centuries ago, by the Bedouins of passing caravans. Some distance further on the villages and palm-groves at the foot of the southern mountain-wall come to an end. The loam vanishes under an ever thicker layer of sand and sand-dunes, and the cars stall several times. In accordance with the instructions of the Sultan we do not go by the normal way, through the plain, to Terîm, but follow

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

621 We had not received favourable reports of Wādī ʿAmd. The el-Aṭṭās family, nevertheless, maintained the contrary; it is their wādī and the Djaʿdī Bedouins who inhabit it are allied with them and are, in a certain sense, under their control, but it is hard to discover how far this control goes. We got the impression that the wādī was very much armed and ready for war. The landscape is barren and, at first, monotonous; the *sēl*-bed is broad and filled with bluish-white, small boulders. Conditions must have been much better in the old days, for the numerous ruins suggest a dense population.

361 231 243 It is long after sunset before we reach Nukhr, where the el-ʿAṭṭās family own a house. The place consists of a few huts and a half tumble-down mud house, in which a room has been prepared for us. It is too warm to spend the night indoors, but the staircase leading to the roof has collapsed. In the middle of the hamlet there is a storehouse for fodder, half below and half above the ground. Its roof is about three feet above the ground and has a parapet about one and a half feet high. The basin thus formed is smoothly plastered with mud, and the grain is thrashed in it after harvesting. It makes a hard but safe sleeping place.

172 312 241 On the following day, June 10th, we set off again south-westwards. At first the wādī is very monotonous and barren and the *sēl*-bed widens considerably. After two hours' riding Wādī ʿAmd makes a bend towards the south and then very soon one comes across date plantations. There are an increasing number of ruins of what, presumably, were defence works, situated on hill-tops. The palm plantations have suffered much from the drought in recent years, as for two years there was neither rain nor *sēl* of any considerable quantity. The subsoil water is far from the surface and wells are 300 to 450 feet in depth so that they are not used for purposes of irrigation but only for supplying drinking-water. Groups of men hoist up the water, singing monotonously the while.

241 312 Further southwards the plantations increase and form an unbroken girdle between the broad, wild *sēl*-bed and the wes-

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

tern bank of the wādī. The fields are bone-dry and trimly cultivated, rain being expected this month. One substantial downpour of rain or a good inundation caused by rain elsewhere is said to be enough for this loam soil, which holds water for so long. Great pains have been taken over the irrigation system; the dams, made of piled-up stones and plastered with an inner lining of mud, suffer much from the *sēls*. Groups of inquisitive people come running towards us out of the villages and ask all sorts of questions of our escort. A grey-headed village-chief turns to us with the inquiry how to put an end to the repeatedly recurring destruction of the stone dykes through the *sēl*. We answer that it would probably suffice if they were to use lime as cement for the boulders: the initial cost of this would be considerable, but it would be a great economy in the long run.

All the women of this district are veiled, even the poor women working in the fields. When working in the sun they wear straw hats with very wide brims. They are not so frightened of us as women were elsewhere and are quite ready for a chat or even to be photographed. The young girls, at the request of the men, climb like cats right up to the crowns of the palm-trees, to pick the ripe fruit from the bunches of dates. Their wide black garments hang untidily about them, the only pretty thing in their dress is the broad girdle ornamented with large and small silver buttons, which encircles the waist. An attempt to buy one of these fails, as the women are all too modest to think of selling a part of their clothing. Many children run all over the place with little bows made of the rib of a palm-leaf, and sharp-pointed arrows of the same, with which they try to kill the few birds that alight on the ripening fruit. Occasionally, as we pass, some relative of one of our escort will present us with a handful of the first really ripe dates.

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

with us ᶜAlī, an old and rather sour man, who was proud of being able to read and who faithfully spelt out the names of the places that we passed. When we had gone a little way he asked if we would buy a pair of spectacles for him at the *sūq*, the bazaar, of the Bandar (the seaport town, *i. e.* Makalla) so that he could better read the Koran. Our third man, ᶜAbdallāh, is a very ordinary sort of Bedouin; he speaks little, but startles us time and again on the march by his monotonously ugly and melancholy Bedouin singsong: *"Yā dānā . . . ā . . . ā . . . āl"* etc. Finally there is little Muḥammad, an indefatigable boy of twelve, who is now having his first experience of a journey of this kind and who has never yet seen either the sea or a town. Besides these, a weaver from Makalla has joined our caravan with a baggage camel and two boys. We ourselves have an enormous camel that we call the *fīl* or elephant, a female camel for the milk supply, and a young and slender animal making its first trip.

The caravan leaders here wear a strange kind of sandals. Broad strips of leather cover not only the whole upper part of the foot but extend out beyond the sole, which makes a rustling noise in walking. It is meant to keep off snakes and scorpions, especially on night journeys. Because of the richer vegetation and greater moisture, these creatures seem to be more prevalent here than in the arid interior, where sandals are chiefly worn in the afternoon to protect the feet from the heat of the ground.

Nearly all the men of the village accompany us through the palm-gardens to the river; we wade through the warm water and then come to more date-groves. After that there are *dhura* fields, which finally give place to shrubs, grasses and acacia trees. We make a short cut where the river bends; the fringe of palms continues uninterruptedly beside the water.

Dhēb declares himself ready for *takalluf*, *i. e.* for doing his utmost, so it is perhaps possible that we shall reach Makalla in six days. As soon as we enter the region mapped out by Little, Von Wissmann is able to give up his detailed survey

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

3/2 The way ran by the river all the time now, through an un-
361 interrupted grove of date-palms. At one time the path follows
511 the left bank, then at another the right. At regular intervals
241 we pass long, low dams made of boulders; these store up the water which is conducted through channels for the irrigation of the palm-gardens. The fringe of palm-trees is not, as a rule, wide and above it, against the rocky slopes, where no shade falls, villages swelter in the heat of the sun. They are always in a good strategic position, for this fertile Wādī Ḥadjr has been a much disputed territory until a short time ago. To this must be attributed the low degree of prosperity and the lack of intensive cultivation of all the arable land here. In this respect Wādī Dō^{c}an is on a much higher level.

361 After a few hours the wādī becomes narrower, the rocky
342 slopes approach the river, and the cultivated strips of land grow narrower and, at last, cease entirely. Our way goes over a plain strewn with sharp, reddish-brown stones, where lies the village of Ḥuṣn Mṣēne^{c}, which consists entirely of houses with neither front nor back walls; they are like short tunnels of stone with their further end towards the rock-wall and their front facing the river. When we asked the reasons for this way of building we were told that they were poverty and the great heat; in this way advantage is taken of the breeze which blows through the tunnels. Its inhabitants belong to a kind of gypsy tribe living apart from other people. Further on they dwell in large villages of straw-huts; they are half-nomads and are despised by the settled inhabitants.

312 The wādī narrows until it becomes a rocky gorge through which the river flows underground. Its narrow bed is full of boulders; probably the *sēl* after rain rushes through here above ground as well. The path rises steeply up the rocky slope, and it is a real feat on the part of the camels to climb up, with their heavy loads, over the slippery boulders and then to descend again into the wādī where it widens out. Halfway through the gorge the river comes to the surface again, showing a beautiful greenish-blue colour.

3:Royal Institute of International Affairs U-4 (no date)1954 M1 Middle East
Hadramout MM2

vides seasonal grazing for camels, sheep, and goats.[1] Nevertheless, the Western Protectorate, where rainfall averages from about 2 inches a year on the coast to 7 inches in the uplands and 12 inches in the highlands, is self-supporting in food in normal seasons; the main crop is millet, with wheat, barley, and mustard as summer crops, and other products of importance are coffee and the drug *qat* (the chewing of which is a pernicious habit in south-west Arabia); field-terracing is general in the highlands, and elsewhere the land is mainly irrigated from wells. In the Eastern Protectorate the rainfall is lower and food has to be imported, particularly for the coastal areas and the pastoral tribes; millet is again the main cereal crop, supplemented by lucerne, tobacco, honey, and fish products; until recently most of the honey has been exported to Java, this being connected with the large-scale eastward emigration from the Hadramaut in the last 150 years. The date-palm provides the chief food product of the Hadramaut.

The estimated population of Aden Protectorate at mid-1952 was 800,000. The organization is largely tribal, consisting of some thirty sultanates, shaikhdoms, and other tribal units of varying size. During the past hundred years their rulers have one by one entered into treaty relations with the British Government and are under its protection; but British administration (through an Agent in each Protectorate, responsible to the Governor of Aden) is essentially indirect, and has grown piecemeal for the prevention of intertribal conflict in the interests of travellers and commerce. Some of the chiefs have voluntarily accepted advisory treaties binding them to administer their territories in accordance with the Governor's advice. But not all of them have complete control over their nominal subjects, and the authority of those who have not accepted advisory treaties with the Governor of Aden may be highly capricious; reference has already been made to the conduct of the important Sultan of Lahej which led to a British intervention in April 1952.[2] The most important state of the Eastern Protectorate is the Quaiti Sultanate of Shihr and Mukalla which, like the Sultanate of Lahej, carries the title of 'His Highness' and has its own small regular army; the Quaiti

[1] See 'Banishing Famine from Aden', *Commonwealth Survey*, 14 May 1949, pp. 37–8. For the distinction between steppe and desert vegetation, see Fisher, *The Middle East*, pp. 72–3 and map, p. 70.

[2] See above, p. 103; and see generally Doreen Ingrams, *A Survey of Social and Economic Conditions in the Aden Protectorate* (Eritrea, Government Printer to the British Administration, 1949), pp. 20–32. A punitive expedition was sent to the Shairi tribe in the Western Protectorate in December 1950 after an attempt to assassinate the British Agent.

29:Dunn S-4 (1952)1952 MI Middle East
Hadhramaut MM2

CHAPTER VIII

COTTON IN ARABIA

Arabia is divided into numerous groups, most of which are actually principalities. The boundaries of the subdivisions are indefinite and so is the authority of the local rulers in most cases. Some of these groups like to call themselves independent countries. One is called a kingdom. Some are called protectorates. The British have exercised the major influence over all these groups for 50 years and still do but in varying ways. One small spot of land actually belongs to the British Crown.

ADEN PROTECTORATE

The narrow strip of land along the southwestern tip of the Arabian Peninsula includes a number of territories and dependencies of Arab chiefs which have been organized under a protectorate treaty with the British, and is called the Protectorate of Aden.

The Protectorate is about the size of Arizona. It has about 660,000 people, many of whom are nomads. The country is mostly mountainous though there are a few valleys and flood plains capable of cultivation. The Food and Agriculture Organization estimates that there are about 270,000 acres actually in cultivation at the present time. As the plains receive only about four inches of rainfall annually, irrigation is required. Considerable water is available as rainfall in the mountains is rather heavy, approaching 40 inches annually, but facilities are inadequate for catching and directing the water.

The economy of the protectorate rests almost solely on agriculture. The principal crops are grains and some fruits, principally dates. While a small quantity of coarse grains is normally exported, the country usually imports about half its bread grain requirements.

COTTON

Cotton has been grown in this area in small quantities for hundreds of years, but never in commercial quantities until very recent years when British interests began promoting production.

The following article on the present status and prospects of cotton production in the Protectorate was written especially for this report by the research staff of the Empire Cotton Growing Corporation, London, with the collaboration of Major Congdon, Manager of the Abyan Board in the Aden Protectorate.

RECENT HISTORY

"During the last war to increase the production of food, the old Abyan irrigation system was reopened and the headworks were partially restored under the direction of the Department of Agriculture. The reclaimed areas were used mainly for sorghum, bulrush millet and simsim, but it soon became

29:Dunn S-4 (1952)1952 MI Middle East
Hadhramaut MM2

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evident that a cash crop was needed to exploit fully the potentialities of the area and to make it self-supporting.

"A small quantity of X1730 A cottonseed was therefore introduced from Tokar in the Sudan in the 1946-47 season and though this was not successful in the first year, when tried again in 1948-49 it gave an average yield of some 1,750 lbs. of seed cotton per acre from an area of 80 acres. Production thereafter increased rapidly, reaching 1,500 bales of 400 lb. in the following year (1949-50) and 9,900 bales in 1950-1951.

METHOD OF CULTIVATION

"The system of irrigation used in Abyan resembles most closely, but is not identical with, that of the Gash and Tokar in the Sudan. After the rains in July-September the water flows down from the mountains in two wadis, the Bana and the Hassan, and is held by slightly bow-shaped bunds about 30 feet high with a base of some 50 feet. From these the water is directed by means of deflectors into rough canals and thence into the fields. Later the upper-most bund is broken and the water goes down to the next bund where the process is repeated. This is continued until eventually the unused water finds its way to the sea.

"Cotton is planted about 10 days after watering, in furrows made by an ox plough and is later thinned to leave single plants at a spacing of 1 metre by 1 metre. The plants, which rely entirely on the moisture in the soil at the time of planting, often grow to a height of 12-13 feet, and produce a good crop, with lint which is little, if any, inferior to that spun from similar cotton grown in the Sudan.

ABYAN BOARD

473 248

"In order to develop the irrigation system in Abyan, an Abyan Board was formed in 1947 representing the interests of the Department of Agriculture and the states concerned. The crops are grown on a cooperative basis, as in the Sudan, the proceeds being divided between the cultivator, the Abyan Board and the landowner. At present 50 per cent goes to the cultivator, 25 per cent to the Board and 25 per cent to the landowner. State taxes of 5 or 10 per cent are payable by the landlords, depending on the status of the land.

"The Board purchases the seed cotton from the cultivator at a fixed price, gins the seed cotton and sells the lint at present to the Raw Cotton Commission with whom a five-year agreement has been made. Any profit resulting from the sale of lint is used to continue the development and expansion of the scheme.

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OTHER AREAS

"Cotton is also grown in the Ahwar, Lodar and Yeramis districts, and in Lahej, where a small cotton growing industry has existed for a long time, with asiatic and punctatum types predominating. These types are a potential source of danger to the improved types grown in Abyan, both on account of the risk of deterioration in seed through accidental crossing and the introduction of pests such as pink bollworm. Attempts are now being made to bring cotton cultivation in Lahej under control in order to minimize these dangers.

29:Dunn S-4 (1952)1952 MI Middle East
Hadhramaut MM2
Oman MK1
Trucial Oman MK4
Qatar MK3
Kuwait MI1

a plateau. Except for a few oases the land is not cultivatable without the use of expensive irrigation facilities. The hills are not as high or as numerous and rainfall is not as heavy as in the areas to the west. The agriculture now consists mostly of grain and fruit crops and grazing. The half million people have not been able to subsist on the land, and they normally import substantial quantities of grain as well as staples against exports of fruits. No significant development is expected here in the near future.

THE TRUCIAL COAST

The land area along the Arabian side of the Persian Gulf from the Oman Gulf to the Qatar Peninsula known as the Trucial Coast is owned by a group of independent sheiks who have various treaties with the United Kingdom giving the British virtual control over the area. This coastline is over 400 miles long, but the country is very hot, arid, and sparsely settled. Agriculture presently is negligible and opportunities for future development are thought to be extremely limited. The great hope is that oil will be found along this coast as it has been in adjacent areas.

QATAR

Qatar, another sheikdom on the Persian Gulf which has a rather exclusive treaty with the British, is one of the oil kingdoms that has become immensely rich overnight. For this reason Qatar may become a thriving community but not an agricultural economy. The Qatar Peninsula is not very large (about 5 million acres) and is very hot, arid, sparsely settled, and, like the rest of the coast, not susceptible to any extensive agricultural development.

KUWAIT

Kuwait, the other independent coastal area on the Persian Gulf under British protectorate, is another newly-rich oil community. In fact, this is one of the largest of the oil-producing areas. Proven reserves are thought to be half as large as proven reserves in the United States. Oil royalties ($200 million annually) are being used for many community development projects including some in the agricultural field. But the small arid area (5 million acres) and limited population preclude any extensive agricultural development.

Table 48

ADEN PROTECTORATE: Acreage and Production of Principal Crops
1948 and 1949

District and Crops	1948 Acreage	1948 Production	1949 Acreage	1949 Production
	Acres	Metric Tons	Acres	Metric Tons
West Aden				
Millet and Sorghums	60,000	12,000	62,000	12,000
Other Small Millets	10,000	1,500	9,500	1,900
Wheat	1,500	750	1,500	750
Barley	4,500	3,000	4,500	3,000
Sesame	10,000	1,000	8,500	800
East Aden				
Millet and Sorghums	20,000	4,000	20,000	4,000
Other Small Millets	2,000	500	2,000	500
Wheat	2,500	2,500	2,000	2,500
Dates	10,000	5,500	10,000	5,500

SOURCE: Office of Foreign Agricultural Relations, United States Department of Agriculture.

5:Gt. Brit., Colonial Office G-3 (1947) 1949 MM1 Aden
Hadhramaut MM2

315 A party from Petroleum Concessions Ltd. arrived in November and, after visiting Hadhramaut, went east along the coast to prospect the Mahra area.

Chapter 7: Agriculture, Fisheries and Forestry

AGRICULTURE

General

132 There was rain in the west of the Hadhramaut and in the Eastern coastal 312 area in February, and in June and August good rains in the Hadhramaut formed a new lake above the recently finished Nuqra dam. The spring 243 wheat and barley crops were satisfactory. Efforts to persuade the farmers to grow barley rather than wheat continued and towards the end of the year some effect was noticed, partly owing to the discovery of a way of cooking the barley so as to make it acceptable as food; experiments in machine grinding were also started.

Staff

647 The staff of the Department of Agriculture consists of a Director, two Agricultural Officers, an Agricultural Assistant, an Engineer Assistant and six Agricultural Instructors.

Land Utilisation

312 Lack of rainfall imposes a severe limitation on crop production in the Protectorate. Highly developed conservation measures, run-off 311 control, flood irrigation and artificial irrigation are employed to secure arable land production. The percentage of arable land to the desert and range is estimated at 0·33 per cent. Established pastures and meadows are unknown. Dry forest scrub is found on the Island of Socotra and in the far Eastern Mahra Coast.

Crop Production

241

Western Aden Protectorate

	Acres	Tons
Millet—sorghum	60,000	12,000
Bulrush millet and other small millets	10,000	1,500
Wheat	1,500	750
Barley	4,500	3,000
Sesame	10,000	1,000

Eastern Aden Protectorate

Millet—sorghum	20,000	4,000
Bulrush millet and other small millets	3,000	500
Wheat	3,500	2,500
Date palms	10,000	5,500

5:Gt. Brit., Colonial Office G-3 (1947) 1949 MM1 Aden
Hadhramaut MM21

134 are generally of good-quality alluvium. In high-altitude districts less fertile soils are found and they are generally light in texture, except in some limestone areas where they are heavy and intractable.

312 (*b*) *Water supplies* are generally good and sufficient for the needs of cultivators who tend to concentrate in the river-valley areas or in the highland areas where some rainfall can be expected. Water becomes scarce in the Eastern districts where the settled country emerges into the Empty Quarter. Domestic water supplies are obtained from springs, wells, dams, tanks and cisterns.

(*c*) *Irrigation and drainage systems* are highly developed. At high altitudes the run-off is led to terraces in order to boost the rainfall which is insufficient in itself for crop production. Flood irrigation systems are found in the river valleys and on the coastal plain. Irrigation from permanent streams and springs is highly developed. Artificial irrigation is from open wells. Animal power lifts are worked at depths of 10 to 60 feet and in the most favourable districts command up to 10 per cent. of the total arable area.

241 (*d*) *Mechanical cultivation* is confined to one small unit used by the Abyan Board in the Abyan district. Elsewhere the simple Arabian plough, combined levelling-board and scraper, harrow and a drill attachment for the plough comprise the implements used by the cultivator.

(*e*) *Application of fertilisers.* Organic fertilisers only are used. Farmyard manure is commonly used in all mid-altitude and highland districts. Farmyard manure, human excreta and town wastes are used in the Hadhramaut. Fish and guano are commonly used in the Eastern Protectorate coastal areas.

Land Tenure

423 (*a*) Customary tribal law and Shari'a law affect land tenure.

(*b*) Individual ownership is the common and most-desired form of tenancy; share tenancy is the usual form of leasehold tenure.

(*c*) His Majesty's Government owns no land in the Aden Protectorate. Some of the Arab states hold extensive tracts of land as state domain. All the land is held by indigenous inhabitants except for a very small percentage held by Yemeni settlers and a few Indians and Somalis.

Agricultural Credit

452 There are no banks in the Aden Protectorate. One small Farmers' Association giving credit assistance to its members was formed during
453 the year. The Department of Agriculture, the local Governments, and in the Wadi Hadhramaut a Relief Organisation afforded assistance to farmers with interest-free loans.

FISHERIES

654 A visit in February by the Fisheries Adviser to the Secretary of State
226 for the Colonies resulted in the arrival of a fisheries research party in

5:Gt. Brit., Colonial Office G-3 (1947) 1949 MM1 Aden Hadhramaut MM21

509 no regular steamer service, but the R.A.F. continued the carrying of mail and Government passengers, while in May Ethiopian Air Lines, an American company, received permission to run a fortnightly service, Aden-Riyan and return, which they continued to do throughout the year.

Chapter 11 : Geography and Climate

SITUATION AND AREA

131 The Aden Protectorate which can be more conveniently described administratively and geographically by dividing it into two areas, the Western and Eastern, has a total superficial area of about 112,000 square miles. It is bounded on the east by the western boundary of the Sultanate of Muscat and Oman, on the north and west by the Ruba' al Khali (or Empty Quarter) and the kingdom of the Yemen (whose southern boundary was temporarily stabilised by Article III of the Treaty of Sana'a of 11th February, 1934, by which His Majesty's Government and the Government of the Yemen agreed to maintain the *status quo* as on the date of the signature of the treaty), and on the south by the Gulf of Aden and the Indian Ocean. The Aden Protectorate seaboard starts at Husn Murad (opposite Perim) on the west, and runs for 740 miles eastwards to Ras Dhurbat Ali, where it meets the frontier of the Sultanate of Muscat and Oman.

CLIMATE

132 The maritime plains are damp and hot in the summer, and are subject
133 to sandstorms and high winds. In the winter (October to the end of March) it is cool and sometimes cold at night and much less damp.

In the mountains, which vary in height between 1,500 and 8,000 feet, it is drier and cooler during the day and night; at above 4,500 feet it can be very cold.

In the Wadi Hadhramaut and the intervening tableland or "Jol", extremes of both heat and cold are encountered. The heat, in contrast to that of the coast, is dry, but more intense. The rainfall is small.

There is little rainfall in the littoral and maritime hills; here cultivation [241] is chiefly dependent on irrigation from water channels and courses. In the highlands well irrigation is common and there is heavier rainfall, which is led down ravines and defiles into terraced fields.

GENERAL DESCRIPTION

133 The Western Aden Protectorate is divided into: the littoral belt which varies between four and 40 miles in depth; the maritime ranges about 1,000–2,000 feet above sea-level; the intramontane plains over 3,000 feet high; and the highland plateau which ranges from 5,000 to

6:Gt. Brit., Colonial Office G-3 (1948) 1950 MM1 Aden
Hadhramaut MM2

(B) EXPORTS

No.	Commodity	No. of packages	Quantity	Value Rs.
1.	Tobacco, native	13,236 bdls.	16,858 cwt.	8,93,650
2.	Honey in comb	—	5,200 lb.	5,6001
3.	„ cleaned	—	1,020 „	2,550
4.	Dates, country	—	900 „	220
5.	Lime	3,879 bags	4,000 cwt.	15,500
6.	Sheep and Goats' skins, tanned	—	10 scores	1,000
7.	Dried lemons	229 bdls.	581 cwt.	33,000
8.	Fish oil	17,049 tins	68,195 gln.	1,27,860
9.	Miscellaneous	—	—	2,93,380
			TOTAL	13,82,760

Chapter 7: Agriculture and Fisheries

AGRICULTURE

In 1948 farming conditions were generally poor in the Aden Protectorate. Conditions of 1947 were reversed in the areas west of the Bana river, which had a poor 1947 season, received fair rainfall and flood conditions, while east of the Bana erratic and poor rainfall over large areas reduced food production to a low level. This was particularly true of the Hadhramaut and other eastern districts where complete drought returned to the country, causing famine conditions to reappear at the end of the year. The shortage of food was accentuated in those areas where the economy of the country is largely dependent on remittances from abroad. Famine appeared particularly in the Wadi Amd and in Rakhya, where food production is not secured by any irrigation from underground supplies, but is dependent entirely on rain and runoff control. These districts are also partly dependent on remittances from Hyderabad and became particularly affected when India invaded Hyderabad, and currency decrees in Hyderabad cut off the flow of remittances. The scarcity of food was further aggravated by the ban on exports of grain from the Yemen.

Staff

The technical staff of the Department of Agriculture consists of a Director, two Agricultural Officers (to be increased to four), an Agricultural Assistant and six Agricultural Instructors.

The Abyan Development Scheme has the part-time services of an Irrigation Adviser.

Rainfall Crop and Livestock Conditions

In the districts west of the Bana river *saif* rains were fair, particularly in the highland areas. East of the Bana river *saif* conditions were poor in many districts, but in Beihan conditions were good and the Wadi ran no less than eleven floods. Most of this water was from the runoff of

6:Gt. Brit. . Colonial Office G-3 (1948) 1950 MM1 Aden
Hoyle current MM1.

the north-east Yemen Plateau, but local rain was sufficient and caused damage to the wheat and barley crops when at the harvest stage.

In the districts west of the Bana *kharif* conditions in Lahej and Subeihi country were good, but in the highland districts rainfall was insufficient for crop production over most of the year. In Abyan which is watered by the Bana and the Hassan rivers where they enter the coastal plain, a weak flood season was experienced, but this resulted in effective flood control, and on the balance, in satisfactory crops. East of the Bana and the Abyan district, conditions in the *kharif* were bad. Lack of rain in most districts reduced crop production based on a rain and flood irrigation system to nothing. Fodder supplies needed for sustaining the animals working the water lifts in permanently irrigated areas were reduced, and lowered production from what should normally be a reliable source.

Livestock suffered and were reduced in numbers as a result of poor flood conditions caused by insufficient rain. A secondary factor which seriously affected camel owners and transporters in the Eastern Protectorate was a dearth of the sardines which are usually caught in great quantities on the Hadhramaut coast and used in a dry state as fodder for livestock.

Crop Production

	Acres	*Tons*
Western Aden Protectorate		
Millet—sorghum	40,000	8,000
Bulrush millet and other small millets	7,500	1,125
Wheat	1,500	750
Barley	4,500	3,000
Sesame	5,500	550
Eastern Aden Protectorate		
Millet—sorghum	5,000	1,700
Bulrush millet and other small millets	1,000	200
Wheat and barley	3,500	2,500
Date palms	10,000	4,500

Pests and Diseases

No report of locust activity was received during the year.

Rust is probably the most important plant disease in the Aden Protectorate. In 1948, little damage was recorded from this disease.

Animal Health

No rinderpest was recorded during the year. Goat virus was imported from Kenya and used for the immunisation of cattle in Abyan. Horse-sickness vaccine was used in Beihan, Abyan and Lahej.

	Western Aden Protectorate	*Eastern Aden Protectorate*
Camels	30,000	45,000
Cattle	50,000	8,000
Goats	400,000	320,000
Sheep	110,000	50,000

6:Gt. Brit., Colonial Office G-3 (1948) 1950 MM1 Aden
Hadhramaut MM2

Market Conditions

Food grain prices showed no reduction during the year. Prices at the main coastal centres of Aden and Mukalla fluctuated between £25 and £37 per ton, the higher rates being recorded in Mukalla towards the end of the year, when famine conditions were confirmed in the Hadhramaut. 435

The price of sesame seed fell from the high levels of 1947, and the price during the year varied between £60 and £70 per ton.

The Maria Theresa dollar exchange dropped 23½ per cent at the end of the year, Rs. 186 being asked for 100 dollars.

Demonstration and Experiment

In the Hadhramaut the introduction of barley passed the third season; it may be claimed that the crop has found favour and that it is most likely to become well established in the economy of the country. The object of this introduction was to obtain a more dependable crop for winter sowing. Wheat was in the past the winter crop, and always a risky one owing to the danger of rust attacks. Barley in southern Arabia is regarded as a safer crop in all respects, but for some reason it escaped the attention of farmers in the Wadi Hadhramaut. 242 243 248

In Abyan cotton variety X1730A was grown on a field scale on Abyan Board tenants' land. The crop was sown on land inundated in August with approximately three feet of water. No other water was applied after sowing. At the end of the year, the crop appeared most promising.

Plant Introduction

Three-hundred and fifty apricot, 350 Japanese plum, and 24 peach trees were imported from South Africa, for sale to farmers on the Audhali Plateau.

One hundred citrus trees were imported from Eritrea, for planting and distribution in Abyan.

Development Schemes: The Abyan Board

Work on improvement of the systems of the Na'aza and Ba Tes canals was carried out in the first nine months of the year. A stone regulator at Ba Tes head and a series of stone drops and regulators were installed on this system and on part of the Na'aza system. Much work remains to be done, and in a manner which will allow of the improvement to be incorporated in the general plan of development for the area. 242 241

Following further examination of the area by Mr. N. Simansky, Irrigation Adviser, it was possible to submit an application for a loan of £250,375 from the Colonial Development and Welfare Fund. Sanction for this loan was obtained in July, and work started in the last quarter of the year. Machinery and cement were ordered, while local purchases were made from ex-War Department stocks held in Aden. At the end of the year, two Agricultural Officers, one of whom acted as manager to the Board, one British and three Italian surveyors, and one British accountant, together with a large Arab staff were employed on the scheme.

The development programme of the Board continued side by side with

6:Gt. Brit., Colonial Office G-3 (1948) 1950 MM1 Aden
Hadhramaut 1952

241 the management of irrigation farming on some 5,000 acres. The value
242 of the Board's quarter-share of the net crop obtained, after paying harvesting and threshing expenses in kind, was estimated at over Rs. 1,25,000.

Farming in Abyan, largely influenced by the Board's operations, proved important to the economy of the Western Aden Protectorate. In the production of millet alone, it is estimated that a 30,000 bag crop, equal to 3,000 metric tons, was raised. A large portion of this was held as a reserve, or had been marketed to the easterly districts at the end of the year. General control on the export of this grain to Aden itself was maintained, and the flow of the crop to the districts to the east was encouraged.

The Wadi Hadhramaut Rehabilitation Scheme

654 This was wound up by Government at the end of the 1947–48 financial
426 year. Farmers with outstanding loans were given ten years in which to repay, the basis of repayment being at the rate of 2 per cent of the total loan from the spring crop, 3 per cent from the autumn crop, and 5 per cent from the winter crop grown. By the end of the year, it was apparent that this system of deferred repayment was not proving satis-
[452] factory. Moneylenders had again become active, while late planting and reduced acreage were noticeable in many districts. This undoubtedly resulted from lack of foresight on the part of many farmers, who had failed to reserve sufficient seed and fodder and preferred to resort to moneylenders for obtaining their needs on credit.

406 At the end of the year, proposals were on hand for the introduction of numbers of diesel-driven irrigation pumps for use in the Wadi Hadhramaut.

Co-operation

476 The Beihan Farmers' Association, formed in the previous year, progressed in a satisfactory manner, and much useful experience was gained by the officials of the association. A good *saif* season helped the members, but this was followed by an almost complete lack of water in the *kharif*. In spite of these difficulties, the association was able to help its members in their requirements of seed, stock, and cash needed for well equipment and for concentrates for feeding livestock. At the end of the year, the association had acquired some Rs. 12,000 from members' subscriptions and from interest charged on loans.

476 This association cannot be termed a co-operative society in the true
659 sense of the word. It is an association which has the full support of the local Government, and which at present makes use of Government offices and storehouses for its activities. In the present stage of development this is considered to be the most desirable form of association for Beihan.

Western Aden Protectorate

226 The Western Aden Protectorate fisheries are of minor importance
361 compared with those of the Eastern Protectorate. Shuqra, the seat of
439 the Fadhli Sultan, is, however, a fishing port with a considerable export trade in dried fish

7: Gt. Brit., Colonial Office G-3 (1949-50) 1951 MM1 Aden
Hadhramaut mm2

EXPORTS

		Quantity	Value Rs.
Tobacco, native	cwt.	22,341	23,59,700
Honey, in combs	lb.	15,348	61,390
Honey, cleaned	"	2,160	7,560
Dates, local	cwt.	299	7,530
Lime	"	8,643	43,220
Sheep and Goat skins ..	scores	326	1,140
Lemons, dried	cwt.	651	37,070
Fish oil	gal.	2,924	7,310
Miscellaneous			2,48,920
TOTAL VALUE OF EXPORTS ..	Rs.		27,73,840

Chapter 7; Production

AGRICULTURE

Principal Products

Western Aden Protectorate

	Acres	Tons
Sorghum Millet	62,000	12,400
Bullrush Millet and other small Millets..	9,500	1,900
Wheat	1,500	750 *a.*
Barley	4,500	3,000 *a.*
Sesame	8,500	850

Eastern Aden Protectorate

Sorghum Millet	20,000	4,000
Bullrush Millet and other small Millets..	2,000	400
Wheat	2,000	1,000 *a.*
Date palms..	10,000	3,500

(*a*)—Crops sown in previous year, harvested in 1949.

Estimate of the Numbers of Principal Classes of Livestock

Western Aden Protectorate		*Eastern Aden Protectorate*	
Camels	30,000	Camels	40,000
Cattle	50,000	Cattle	7,000
Goats	400,000	Goats	250,000
Sheep	100,000	Sheep	30,000
Donkeys	3,500	Donkeys	3,000

The year 1949 opened with drought conditions in almost all districts, but early Saif rains, followed by good late Saif and good Kharif rains, and an exceptional fall of rain in the early part of the winter combined

7: Gt. Brit., Colonial Office G-3 (1949-50) 1951 MM1 Aden
Hadhramaut mm2

to make it one of the most favourable for many years. The rains of November and December were judged to have been the heaviest seen for thirty years.

Unfortunately the cultivator was in many areas, particularly the eastern districts, unable to make full use of these favourable conditions. This was the result of the bad season of 1948 which had caused famine in the Wadis 'Amd and Rakhya of the Hadhramaut, and continued to cause famine for the first four months of 1949. Famine relief and rehabilitation measures were largely responsible for getting farmers in these western Hadhramaut districts back to work, and by the end of the year there was little indication that a famine had existed in the early months of the year. In the Hadramaut important famine relief and famine prevention measures were adopted ; of outstanding importance was the introduction of a pump scheme financed by the States, and by the end of the year considerable progress had been made with this scheme. Conditions were severe in the 'Aulaqi districts of the Western Protectorate, but other districts, notably Abyan, had surplus grain stocks, and the districts which were short were able to draw on these supplies and move them, mainly by camel transport, to where needed.

The year 1949 saw great expansion in the Abyan scheme ; offices and staff buildings were built, supplies were accumulated, and important irrigation work was extended, particularly in the region of the Wadi Hassan. The year saw the emergence of Abyan as a successful producer of long staple cotton, and the harvest from some 82 acres (which averaged 1,750 lb. of seed cotton to the acre) was ginned on a roller gin in Abyan, pressed on a hand press in Aden, and exported to Liverpool for sale to the Raw Cotton Commission. Planting for the 1949–50 crop was extended to over 1,000 acres.

Rainfall, Crop and Livestock Conditions

Saif Rains Season. An abundant Saif rain was received in almost all districts of the Protectorate in 1949. In parts of the Eastern Protectorate the rains came late, but were heavy ; and in the Hadhramaut considerable destruction was caused to irrigation works from the resulting floods. The great Nuqra Dam, which had stood successfully for the previous two flood seasons, received the full weight of the combined floods of the Wadi 'Idim and Wadi Ser and was breached owing to a blow-up of the apron caused by excessive up-stream pressure.

The Saif rains were badly needed. They gave the cultivator, hard pressed through the previous bad season, a chance to grow grain and fodder crops with which to build up his condition in readiness for cultivation in the Kharif season.

Kharif Rains Season. Rain followed close on the finish of the Saif, and in almost all districts the rainfall was sufficient for the needs of the cultivator. In November, 1949, the Protectorate was blessed with that rare visitation, a general winter rainfall, which fell with exceptional heaviness, particularly in the north-eastern areas from Beihan across

7: Gt. Brit., Colonial Office G-3 (1949-50) 1951 MM1 Aden
Hadhramaut mm2

to the Hadhramaut. This winter rainfall enormously improved the range conditions over the mountain areas of the Protectorate and produced exceptionally good pasturage for the desert tribes in the north-east.

Large acreages of winter cereals and fodder crops were grown. The year finished with the whole of the Protectorate in good condition.

Livestock started the year in many areas in a starved condition, and in the east with their numbers greatly reduced. At the end of 1949 their condition was restored, but numbers, particularly of small stock, were low.

Plant Pests and Diseases

As a result of the favourable rains and the continuance of sorghum cultivation through the Saif season, to the flood crop of the Kharif, and into the lift irrigated crops planted in autumn, 1949, there was a serious increase in the stalk borer population, and an estimated loss of up to 50 per cent of the crop resulted in the Hadhramaut lift irrigated areas.

Animal Health

No outbreak of rinderpest or other serious animal disease was recorded during 1949.

Market Conditions

With the devaluation of the pound the value of the Maria Theresa dollar rose nearly 30 per cent in relation to rupee currency. Produce prices remained high until autumn, 1949, when a sharp drop occurred in many districts following the good harvests. Sorghum grain on the Aden market averaged about £35 per ton throughout 1949.

Demonstration and Experiment

A field trial with X1730A cotton grown from Abyan raised seed was very successful in 1949; some 1,750 lbs. of seed cotton per acre was obtained from scattered plots totalling 82 acres which had received one watering only before planting. The crop was planted in the months of September and October, and grew rapidly. In some fields plants reached a height of over 6 feet and carried an enormous crop. No important pests or diseases were seen.

The crop was classified by the Chief Classifier of the Sudan Plantation Syndicate, who was flown over for the purpose; he placed about half the crop in grades 3 and 4, and the balance in grades 5 and 6, basing his classification on Sudan Gezira standard for L type cottons. The graded crop was sold to the Raw Cotton Commission.

Varieties of cane, introduced in small quantities from Mauritius in the previous season, were cut in September, 1949, and planted out in observation plots.

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

Chapter 6: Production

LAND UTILISATION AND TENURE

Utilisation of agricultural land

Land for crop production is prepared for irrigation farming by flow or by lift, and for dry farming, where there is a low rainfall and some runoff water, the land is terraced. The great bulk of the land in the Protectorates affords range conditions of light carrying capacity, particularly suited to camels, sheep and goats.

Land and water conservation and utilisation

All farming practices in the Aden Protectorates depend on a highly developed system of conservation of land and water. In the highest areas, land is terraced for crop production and runoff water is led to these terraced fields in order to augment the water provided by actual precipitation; in the mid-altitude areas, mountain torrents are diverted to bunded land laboriously reclaimed and made along the valley sides; below, where the river systems reach wider valley areas and plains, larger diversion works and miles of canal may be used to carry flood water to bunded lands.

This process of water spreading, which is carried on in the lowest lying parts of the coastal plain, results in abundant supplies of underground water. Lift irrigation is practised in many areas and is, of course, of the greatest importance to the more arid north-easterly districts of the Protectorate. At present only supplies drawn from open wells, tapping the "phreatic" zone of water, are used.

Utilisation of land and water is governed by varying systems of tribal and customary law. Where development schemes are now progressing, local authorities are being invited to modify such laws, where necessary, to meet the changing conditions.

Land Ownership

The policy, laws and regulations of each State vary but in general it may be said that the policy of the State is to reserve land ownership for the tribe and generally to tend to favour individual ownership as against State ownership. Land ownership is subject to tribal law and Mohammedan law.

Except for a small area in one district, land in the Protectorate is held by the indigenous inhabitants. The local State Governments are, in some cases, important owners of land.

Land is held in absolute ownership (Mulk), in trusts (Waqf), as dedicatory gifts (Nadr) and in a form of usufructuary tenure (Manh), with near to freehold rights granted in one or two areas to those who have rendered outstanding service to the State.

Payment of a fixed rent in money is only found in a very few specialised systems. Fixed payments in kind, found usually in areas where a high value is placed on land and water, are not general. The

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

427 principal system involves some form of share-tenancy in which the partners divide the crop after harvesting, threshing and winnowing charges and tithes and taxes have been paid in kind. In more fertile areas half of the crop is demanded of the tenant of flood irrigated land, while in the mountain terrace-farming areas a share of one-third is normally levied. In the arid eastern districts shares of one-tenth only may be asked. On lift irrigation systems share-tenancy arrangements vary greatly. In the East, the owner of the land and the well may take a one-tenth share. In the West, the owner of the land and the well may take up to one-half of the crop, though often a share of the seed used and a share in the labour working on the lift irrigation is pro-
423 vided by the landowner. The Qua'iti and Kathiri States have secured legal powers by an agricultural administrative order to further the consolidation of plots round suitable irrigation points, but so far it has been unnecessary to apply such orders.

647 The Department of Agriculture has initiated important programmes
654 for the development of land and water resources. Of particular note is the Abyan Scheme in the Western Protectorate and the pump scheme in the Wadi Hadhramaut in the Eastern Protectorate. At the same time encouragement and organisation in the better use of the excellent indigenous systems of irrigation farming have been the main preoccupation in many districts.

423 Little satisfactory progress has been made in land settlement in the Abyan area. In the Eastern Protectorate, the States, advised by the
406 Residency, are actively encouraging groups of farmers to combine their holdings formerly watered by animal lift in order to make the co-operative use of the mechanical pump lifts an economic proposition.

241.

AGRICULTURE

Principal Crops, 1952

	Acres	*Tons*	
WESTERN PROTECTORATE			
Sorghum Millet	23,333	4,333	
Bullrush Millet and other small millets	9,000	1,286	
Wheat	3,000	2,000*	
Barley	6,000	4,000*	
Sesame	4,250	425	
Cotton (long staple)	9,830	7,206	bales of 400 lb. lint*
Coffee	400	100	
EASTERN PROTECTORATE			
Sorghum Millet (lift and permanent flow irrigated)	3,000	2,400	
Sorghum (flood irrigated)	4,000	400	
Bullrush Millet and other small millets	1,500	300	
Wheat	2,600	3,000	
Date Palms	10,500	7,000	

* Crops sown in 1951 and harvested in 1952.

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

The above figures are derived from estimates checked by sampling, except in the case of the long-staple cotton for which actual figures are available. 241

Outstanding yields of long-staple cotton have been obtained ; yields of one ton of seed cotton with a ginning out-turn of 36 per cent often occur. Yields of irrigated wheat and barley are generally high : wheat yields of 1½ tons per acre are common in the lift-irrigated districts.

Crop Processing

Cotton Ginneries. Long-staple cotton is ginned in two ginneries operated by the Abyan Board, and the total output in the 1951–52 season was 7,206 bales. At the end of 1952 plans were in hand to combine ginning equipment at one ginnery in Lower Abyan. 248 249

Oil Mills. Throughout the Protectorate sesame is crushed in primitive pestle and mortar crushers worked by camel power.

Marketing

Crops for domestic consumption are sold direct by the producer to the consumer, or through merchants, or at markets which are often weekly events in the villages and towns of the Protectorate. 443

Tobacco is exported from the Protectorate by merchants who trade in the Colony of Aden and Middle East markets. 439

Substantial quantities of fresh produce, vegetables and fruit are exported from the Protectorate to the Colony to be sold in the Colony markets.

No marketing boards for export crops exist, but the Abyan Board is at the moment in sole control of the grading, ginning and export of long-staple cotton grown in the Protectorate. 248

Research

Research on cotton and cotton breeding is carried on by the Abyan Board. 242

In the Hadhramaut, the Hadhramaut States contribute funds to an experimental area supervised by an officer of the Department of Agriculture. In this area, which was opened in 1952, investigations on crop production, crop varieties, treatments and water duties have been started.

In the Western Protectorate many varieties of deciduous fruits and citrus have been introduced over the past 14 years, and it is considered that there are sufficient trees in bearing to start on nursery propagation of suitable types. Initial trials have been made at a high-altitude demonstration area on the Audhali Plateau.

Control of Pests and Diseases

Since 1942 efforts have been made, generally with success, to control locust breeding in the Protectorate, which is subject to constant invasions by locusts from other areas. The control of covered smut of sorghum by the use of sulphur for seed treatment has been introduced to areas where damage from this plant disease is common.

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

Agricultural Extension and Improvement Schemes

654 The main development scheme for irrigated land use is that in Abyan. A note on the scheme is given in Appendix I, page 84.

248 406 241 The extension work of the Department of Agriculture is carried on through departmental staff and through State agricultural departments where these exist. Extension work at the moment is mainly confined to a few selected subjects such as cotton growing, fruit and vegetable growing, and lift irrigation by pump.

Cotton Growing Schemes (other than at Abyan). Long-staple X.1730A cotton was introduced for cultivation to the Yeramis district, and from an area of approximately 400 acres some 472,665 lb. of seed cotton were marketed.

In Ahwar, where X.1730A cotton was grown for the second season, 436,311 lb. of seed cotton were marketed from an effective area of 400 acres.

The Hadhramaut Pump Scheme. In the Hadhramaut there has been considerable development of lift irrigation by diesel-engine pumping units since 1948. It is claimed that 389 pump units with an estimated total horse-power of 3,640 have now been introduced. A large percentage of the units have been sold by the Hadhramaut States to local farmers on a deferred payment scheme.

In 1952 pump units irrigated 37 per cent of the total area under lift irigation in the Hadhramaut. The average area irrigated per pump unit is estimated at 8.3 acres as compared with 2 acres by animal lift. The yield from pump irrigated crops in nearly all cases is found to exceed comparable animal lift irrigated crops. The schemes may be criticised on account of the high horse-power used for the irrigated area, but on the other hand with less working hours per day the machinery should theoretically last longer.

Credit Facilities

452 In the Western Protectorate advances have been made through Farmers' Associations, through the Abyan Board and through local States to assist farmers. In the Eastern Protectorate, particularly the Hadhramaut, large sums of money have been advanced since 1944 to enable farmers, or groups of farmers, to maintain local irigation systems and to help farmers to buy pumping machinery by hire purchase. Little or no progress can be made in the development of agriculture without credit facilities.

Agricultural Department

647 The staff comprises the Director of Agriculture, four Agricultural Officers, one Assistant Agricultural Officer and nine Agricultural Instructors.

The Department is responsible for giving advice on agriculture and, in many areas, for the organisation and administration of agricultural development projects. During the financial year 1952–53 it budgetted to spend £19,000.

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

654 which carry the water to bunded fields where the land is inundated to
312 approximately one metre in depth. In the lower part of the district complete diversion of the flood is made by larger earth dams built
241 across the river bed. Generally one metre depth of water is sufficient to raise the crops of sorghum, sesame and cotton, though summer planted crops which have to grow when water is low are given one or two supplementary irrigations.

The date of arrival of the floods is uncertain and the pattern of crop production may alter considerably according to the date of irrigation. For instance, early summer floods will only be used for sorghum fodder, grain, melons and sesame. Later summer irrigations are particularly required for cotton planting and for the autumn sown sorghum crop.

The Farming System

Skilled cultivation is carried on by settlers from many South Arabian tribes who have come to the area since the start of the scheme. Bunding of land, construction of field channels, ploughing and sowing are carried out by draught animals, mainly oxen though camels are brought in to help occasionally. No fertilisers are used at present ; the flood brings with it a heavy burden of silt which reaches the land and maintains its fertile state.

The basic problems concern the farming system. One is largely an irrigation problem caused by a rapid rise in the water-table which has taken place since irrigation was resumed. This rise in the water-table has caused an accumulation of salts in the upper layers of the soil, and has already made crop production on 2,000 acres practically impossible by flood irrigation methods. The other problem is weed control. As a gross area of 100,000 acres may be commanded in the future, and within this area an annual average of 30,000 acres may be cropped, it should be possible to afford long periods of fallow to land in order to reduce the dangers which may arise from heavy irrigation ; but individual ownership of land will greatly complicate such arrangements.

248 At the present time the cotton variety X.1730A, a derivative of
243 Sakel, is the main cash crop grown. All other cash crops in the
246 scheme are common to those of other irrigation tracts of a similar type in South Arabia though there are experimental crops, of which sugar is one. An important feature of the scheme is the need for a large area of sorghum for grain and fodder production. The draught animals depend almost entirely on sorghum fodder for their sustenance and the main food of the people is sorghum millet. It is expected that for some time two-thirds of the area will be maintained under sorghum and one-third under cotton.

Mechanical Equipment

406 The Board owns earth-moving machinery powered by diesel-engined
242 crawler tractors with carry-all scrapers, bulldozers, a ripper and grader and two drag-line scrapers. The policy of the Board is to increase the

established to supply the local market—for the processing of soaps, pressed aluminum utensils, cigarettes, pottery and textiles, the extraction of sesame oil, the cutting of buttons from trochas shells and the building of dhows. Fishing is of potential importance, but its development is handicapped by primitive methods of procurement and handling and inadequate local transport facilities. The agricultural resources of the Colony are limited to market gardens and date groves on the oasis of Sheikh Othman.

Agriculture and fishing are the principal occupations of the tribesmen of the Protectorate. The fisheries of the eastern districts are reputed to be among the richest in the Middle East, while the drying and salting of fish and the manufacture of fish oils, fodder and manure are valuable industries in the coast towns. A large proportion of the people in Western Aden Protectorate and the Hadhramaut engage in agriculture, although the tribes of the steppe country are mainly nomadic pastoralists. The expansion of farming is curtailed by uncertain rainfall and shortage of water supply. In the Eastern Aden Protectorate, cultivation is restricted mainly to the middle portions of the Hadhramaut valley, where the river flows for part of the year. This region is historically famous as a source of frankincense and myrrh. Elaborate terracing and irrigation are employed in many areas for the conservation and the utilization of the limited water resources available. It was estimated in 1948 that less than 0.5 per cent of the total land area was suitable for farming, but the relative extent of pasturage and desert has not been determined. Systems of peasant ownership, tenancy farming and tribal land tenure prevail in different localities. The improvement of agriculture and expansion of irrigation are prominent among the development programs for the Protectorate. A co-operative project for the cultivation of cotton and other crops by modern methods has recently been initiated on 5,000 acres in the Abyan area in Western Aden Protectorate. Little

ably meager. The basic foods are usually breads, dates and milk products, supplemented by vegetables and fruits in season and by varying amounts of meat and fish. Although breads are most frequently prepared from sorghum millet (durra), other forms of millet, as well as maize, wheat and barley are widely used. Rice is generally popular, and large amounts are imported. Dates constitute one of the main food items throughout this region; date palms flourish along some wadies, but the annual crop is inadequate. Numerous types of vegetables and fruits are available in the agricultural areas.

Sheep and goats are raised in both the Colony and the Protectorate. Their milk is used extensively, but only the pastoral tribes are apt to have a sufficient supply. Cow's milk is also consumed in the Colony and in some inland districts, particularly in Western Aden Protectorate, where the grazing conditions are suitable for cattle. Camel's milk is a staple food among certain Bedouin tribes. Ghee, or clarified butter, is employed in the wealthier families. The fat from the tail tissues of the local breed of sheep, which is an important substitute in the Colony and among the eastern tribes, is almost unknown in Western Aden Protectorate. Sesame is cultivated in many areas, and the oil constitutes another source of fats. Meat is seldom consumed more than once a week, except in the more prosperous households. Fish are plentiful along the coast, and both fresh and dried fish are commonly used in the diet.

Housing

Several different types of dwellings are found in Aden Colony. In general, the standards of housing are higher than in the neighboring territories. All variations are encountered between the multistoried stone houses of the wealthy Arabs, the modern style villas of the European and official communities, and the one- or two-story structures of stone or mud brick in which most of the people live. Regardless

30: Gt. Britain G-5 (ca. 1918) 1920 MJ1 Saudi Arabia
Hadhramaut MM21

the greater part of the year, in certain places. These interruptions are due to the entire volume of water—which in dry seasons is not very considerable—being led off into the cultivation and returned again lower down. It is said that the waters of the Tiban, like those of the Bana, occasionally reach the sea after abnormal floods. The Bana River runs continuously from May to October.

The coast-line generally is low and sandy and devoid of promontories or inlets of any size, except at Aden, where craterous promontories rise to about 1,700 ft. above sea-level, forming sheltered bays, and at a point some sixty miles west of Aden, where a spur of the Yemen highlands approaches the coast at Khōr 'Umeirah.

Climate

In the first zone—the littoral—the heat in general is excessive, but the climate is not unhealthy for those who can stand the fierce heat of the day, and the nights are cool. The cultivated oases and river-beds, however, which afford grateful shade by day, should be avoided as fever traps, and the Tiban valley and Lahej oasis in general have an ill name for malaria of a malignant type. The only rainfall is afforded by a few showers in mid-winter. Cultivation depends chiefly on irrigation from the wādi water-courses, and consists almost entirely of millet, *jowari*, and tall fodder crops such as *kirbi*.

In the second zone—the maritime hills—the rainfall is as in the first zone; but there is no opportunity for wādi irrigation, and in consequence scarcely any crops are raised. The air is stifling by day and damp at night.

In the third zone—the intramontane plains—the rainfall takes place during the summer in occasional thunderstorms. The crops are millet and maize, and they become more abundant and fertile as the main watershed is approached. The heat here, again, is very great.

In the fourth zone—the main watershed—there is a considerable rainfall during the summer months, and a bracing and fairly equable climate with sometimes a degree or so of frost at night. Cultivation is scanty, chiefly barley and a few light fodder crops.

In the fifth zone—the plateau—water lies within ten feet or so of the surface, and there is a good deal of irrigation from wells, besides the regular rainfall. This is small, but from October to March the region is liable to dense white fogs which fall after dark and lie thick to 9 a.m. They will wet one through in an hour, but are invaluable to the farmer as they alone keep the crops alive till

30: Gt. Britain G-5 (ca. 1918) 1920 MJ1 Saudi Arabia
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the summer thunderstorms are due. These latter are often extremely violent, even terrifying. Hail occasionally falls. Harvesting of one crop or another goes on throughout the year—chiefly bearded wheat, barley, maize, lucerne, and coffee (but the latter is less frequent than over the Yemen border). Indigo and cotton (a very small bush) are grown in the Nisāb district and grapes on the Yemen border.

In the sixth zone—the Empty Quarter or Great Red Desert—the population is pastoral and follows the grazing according to the rainfall, which is irregular and scanty. Along the principal wādis, which lead north towards the desert, there are permanent settlements and cereal crops are raised, chiefly millet, the stalks of which make useful fodder when grazing is scarce. The semi-nomadic part of the population returns to the settlements to await the next grazing-season in the desert.

In the Aden Interior as a whole the prevailing diseases are small-pox, fever (especially malarial), and, to some extent, consumption. The 'Yemen ulcer' is also common among the tribes.

Population

The population of the Aden Interior (considered as a whole, and including that portion known strictly as the Aden Protectorate), settled and nomadic, may be computed at about half a million. The district is composed of a number of Tribal Confederations or Sultanates, some lying within the limits of the Protectorate proper, some without.

The limits of the Aden Protectorate proper are the delimitation line, previously mentioned, from Ras Turbah to a point some few miles north of Dhāla, and thence a somewhat vaguely defined line continuing at first in a south-easterly direction and then in a generally easterly direction to the coast of the Gulf of Aden near the small settlement of Maqātīn. They enclose an area of about 4,200 sq. miles, having a population of 100,000. The tribal confederations lying within this boundary are: the Subeihi, 'Abdāli, Fadhli, Haushabi, Amīri, 'Alawi, 'Aqrabi, and other smaller tribes; and without are the Yāfa', 'Aulaqi, Beida, Oleh, and 'Audillah ('Audali). The tribes of the Protectorate have a larger proportion of non-combatants and are more settled than those of the remoter interior; the bulk are to be found in the towns and villages of the littoral belt, the chief centres being Lahej, Waht, Shūghrah, and the Abiyān district.

In dealing with a variety of tribes with such different characteristics it is difficult to generalize; broadly they may be divided

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frenzy on religious matters, and ever ready to accuse any one, whose actions are not readily explained, of being an infidel, are apt to be rather slack in their devotions. Some even shirk their prayers at sunset, when such exercises are obligatory. Much of this attitude, however, has to do with their turbulent mode of life and illiteracy, for the most nonchalant are always ready to "fall in" behind any man who has the gift of prayer and follow his attitude and genuflexions, giving the responses with devout accuracy and attention. As to the religious self-denial with which they observe the fast of Ramadan (refusing to avail themselves of the exemption extended by the Koran to all travellers, sick persons, &c.) their austerity would shame more civilized Mussulmans.'

Products and Industries

The products of this region are so similar to those of the Yemen that they need no special treatment; and the crops are referred to in detail in the section on climate. The staple food-stuff of the country is either *dhura* or *dukhn*. Of *dhura* there are two chief varieties: white and red. The staple fodder for animals is, universally, the stalks and leaves of *dhura* and *dukhn*. As to the native industries they are not of any great importance, but attention may be called to the following:

Boat-building is carried on to a limited extent. Though a very great number of native craft of very varied type ply in Aden harbour and around the coast of this district, only 'jolly-boats' are built at Aden; they are after the model of an English rowing-boat, with heavier and stronger frames, and of very rough workmanship. Mat-making and string-making are carried on chiefly in the neighbourhood of Aden. Dry leaves of the *dom* and date-palms are imported from the ports of the Dankali and from Musawwa', and are manufactured into mats. String is also made by twisting the leaves together with the hand; this is called 'Aden string'. To make mats the leaves are divided into small strips, which are plaited into a ribbon three or four inches wide and of great length. The ribbon is stitched or spliced spirally into a cylindrical shape, the circumference representing the required breadth, and the axis the necessary length; this hollow cylinder is then cut down with a knife parallel to the axis, and the broken edges are bound. Somali women are exceedingly expert in the manufacture of such mats, which are in great request for sleeping purposes. The coarser kinds are largely used for the construction of sheds and the roofing of houses. Plates, baskets, sacks, and many other articles are made of such strips of matting.

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291 either with a plain piece of stuff (*dismāl*) worn turban-like, or
302 with a fringed head-cloth (*jibāl*) falling over the shoulders. The Bedouins wear the same type of costume as the other members of their race, but of poorer material; they rarely wear sandals, and have their bodies bare above the waistband and below the knees.

The garments of the women are very similar to those of the men, and, excepting in small particulars, resemble the dress in other districts of Arabia. They ordinarily wear, not sandals, but boots of a yellow or red colour; they dress their hair in short tresses to the number of from 50 to 60, and married women, in addition, have a fringe over the forehead. The better classes go veiled, but the lower classes cover the head with a form of kerchief (*nuqbah*) which they can use as a veil to cover the forehead and mouth, if need be. Young girls do not cover the face.

Industries and Agriculture

433 Of great industries there are naturally none in the Hadhramaut. A small amount of weaving is carried on in the houses, especially at Terīm, but the quantity is decreasing owing to the importation of stuffs from abroad. Formerly the cultivation and preparation of indigo for the dyeing of locally woven stuffs were carried on to a considerable extent, but that industry too has greatly declined except in the more remote districts of the interior. Boat-building, fishing, and the salting of fish are the occupations of many along the littoral. It has been remarked that the inhabitants of the Hadhramaut mountains become the most intrepid sailors; not only the Arabs of Shiheir and Makalla, but also those of the mountain regions show an innate disposition for navigation, even those who may never have seen a boat before.

•241 For the most part the land in the settled centres is in the hands of the Seyyids or of other influential members of a tribe. The chief agricultural products are wheat, maize, millet, indigo, tobacco, sesame, dates, and coco-nuts, the latter grown only on the littoral. Cotton is cultivated here and there, but in insufficient quantities to supply the needs of the district; lucerne is much grown for fodder. A kind of tobacco, known as Humuni, is grown round Ghail Ba Wazīr and has a great local reputation. There are plantations of *ithl* (tamarisk) and *'elb*, two kinds of wood suitable for
[805] making utensils and for building purposes. The seasons are determined by the stars. Irrigation is almost entirely artificial; neither

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Irrigation is almost entirely artificial; neither the rains nor the variable streams are in general adequate to this purpose, and watering of the soil is mainly carried on from wells. These may be sunk practically everywhere in the valleys. As in many other parts of Arabia, the water is drawn up in a leather hoist by animals, usually cows, attached to a cord which passes over a pulley supported on wooden struts; the water thus obtained is received in a large wooden trough whence it is spread over the land by means of little runnels.

Cattle-rearing is the principal occupation of the Bedouins. Camels and donkeys are reared for transport purposes; sheep for killing and for milk; cows only for milk and irrigation work; oxen exclusively for ploughing. Horses are very rare and are considered as animals *de luxe*. Bees are numerous, and much honey is produced. The wild animals most largely found are the rabbit, gazelle, wild goat, jerboa, hyena, hedgehog, a large species of lizard (permitted as food to Mussulmans), and the panther, wolf, and monkey (not permitted as food).

Trade and Commerce

The only ports of importance commercially are Makalla (see p. 232), Shiheir (see p. 232), and Seihūt (see p. 230), and even at these the trade carried on is purely coastal, with the near coast of Africa, the Red Sea, the Persian Gulf and the southern coast of Arabia, and above all with Aden and Muscat. Trade by caravan is carried on from these ports with the whole of the interior of the Hadhramaut and with the southern Arabian littoral as far as Yemen on the west and Oman on the east. Burūm (see p. 233) and Qusei'ir are small fishing villages.

There are no made roads; the routes follow the courses of the wādis or natural paths. Transport by wheeled vehicles is impossible everywhere; all is carried on by camels or donkeys. It is, however, relatively cheap; e. g. a camel from Shiheir or Makalla to Seyyūn costs only 5 florins in the good season; in summer, when forage is scarce, it is higher, but never above 10 florins.

The chief exports are dates, stuffs dyed with indigo, a superior quality of wheat, and honey; smaller exports are shells and fins of fish, the latter exported to India and China. Imports: wheat, butter, coco-nuts, coffee, sugar, rice, cotton and cotton stuffs, pottery, bars of iron and worked iron, sesame oil, petroleum, and tin-ware.